Database documentation for the Ministry for Primary Industries

Centralised Observer Database

cod

B.M. Sanders
and
D.O. Fisher

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Database Documentation Series

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Revision History

	Change	Date	Responsible
1.0	Initial documentation	Nov 2008	B Sanders & D Fisher
1.1	Added trip_number to x_event Alter x_event.fishing_year from char(9) to char(7).	March 2009	B Sanders D Fisher
1.2	Other char datatypes shortened including x_event fmas. Text in section 2 updated.	April-May 2009	D Fisher
1.3	Updates pk for x_fishing_event_catch_sample and related tables	September 2009	D Fisher
2.0	Update including new sections on Set net & Inshore data, revised Purse Seine tables. Reordered columns in some tables including x_event. Renamed some attributes including FMAs. Done under DAT2009-01U upgrade contract.	June 2010	Brian Sanders
2.1	Updated List of figures	18-Aug-10	D Fisher
2.2	Updated x_haul_effort.haul_time comment	6-Sep-10	D Fisher
2.3	Added trip_key to table x_bottom_lining_effort	10-Jan-11	B Sanders
2.4	Added index to x_fishing_event.station_number. Added unique index to y_nfb_nonfish_catch	17-May-11 7-Jul-11	D Fisher D Fisher
2.5	Added time_resumed to z_sll_events	2-Aug-11	B Sanders
2.6	Dropped unique index of trip_number, station_number on z_warp_strike and z_warp_strike_sample	24-Aug-11	B Sanders
2.7	Length fields (2) added to z_trw_2007_samples	25-Oct-11	B Sanders
2.8	Dropped sub_sample_number from pk_z_oto_fish	18Nov11	D Fisher
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2.11	alter table y_trip_vessel, status to char(32), remarks to char(128)	8 Apr 2014	D Fisher
2.12	Changed references to MFish to MPI where required. Added number_non_compliant_cuts to conversion_factor tables.	Dec 2015	D Fisher
2.13	Corrected references to NZDT to NZST.	Mar 2017	D Fisher
2.14	Updated Trawl gear form image re tp table	May 2017	D Fisher
2.15	Added to set net section re Version 2 forms	Jul 2018	D Fisher
2.16	Re-generated Section 4 and 5 from the database. Added section for CF data, updated Nomad and Set net sections.	Sep 2018	D Fisher
2.17	Added table listings for new SLL and tori tables in 2018 and associated changes to report tables	Dec 2019 & Feb 2020	D Fisher

2.18	Added table listings for new BLL, PSI and VME load tables and associated changes to stage and report tables for BLL and PSI. Also attached new Tori 2018, PSI, VME, BLL forms to Appendix 3. Added descriptive text to section 3.6 BLL and to 3.7 non-fish bycatch	Mar 2021 Sep 2021	A Liu JQ Maggs
2.19	Increased field lengths in tables z_species_code and x_species_code	Dec 2021	JQ Maggs
2.20	Added the VME dataset to Section 3, and associated table listings.	Jun 2022	C Wood S Carswell
2.21	Updated the description for ageing material samples and benthic tables to capture benthic matching processes. Increased net_id field lengths in tables z_setnet_gear, z_setnet_nets_set, y_setnet_nets_set, x_setnet_nets_set. Added new columns to z_benthic and y_benthic to facilitate matching of images to Benthic items.	Nov 2022	C Wood S Carswell

1 Database Document Series

The National Institute of Water and Atmospheric Research (NIWA) currently carries out the role of Data Manager and Custodian for the fisheries research data owned by the Ministry for Primary Industries (MPI) formerly the Ministry of Fisheries.

This MPI data set, incorporates historic research data, data collected by MAF Fisheries prior to the split in 1995 of Policy to the Ministry of Fisheries and research to NIWA, and data collected by NIWA and other agencies for the Ministry of Fisheries and subsequently for MPI.

This document is a brief introduction to the Centralised Observer Database (**cod**), and is a part of the database documentation series produced by NIWA. The Centralised Observer Database incorporates all the data previously held in three Empress databases, namely the Observer (**obs**), Observer Length Frequency (**obs_lfs**) and Observer surface longline (**l_line)** databases. In addition **cod** includes a copy of the observer collected data from the Age database (**age**) for otoliths collected and catalogued.

All documents in this series include an introduction to the database design, a description of the main data structures accompanied by an Entity Relationship Diagram (ERD), and a listing of all the main tables. The ERD graphically shows the relationships between the tables in **cod**.

This document is intended as a guide for users and administrators of the **cod** database.

Access to this database and data are restricted to specific Nominated Personnel as specified in the current Data Management contract between the Ministry for Primary Industries and NIWA. Any requests for data should in the first instance be directed to MPI.

2 Observer Data

The Scientific Observer Programme (SOP) was created in 1986 to send observers, contracted to the then MAF Fisheries, to monitor the catches of commercial trawlers. Since then observer's duties have extended to a number of fisheries and collecting observations for a range of data sets. The Scientific Observer Programme was later renamed to the Observer Programme, and in late 2004 re-branded as ‘Observer Services’.

The **cod** database is dedicated to information collected by these Ministry Observers. The **cod** database, contains the catch and effort information for observed commercial fishing vessels, ageing materials, length frequency and biological data for commercial species as measured by the observers, as well as relevant trip and tow information.

Observers on each vessel are responsible for completing their Observer Catch Effort forms typically contained in a logbook. Each logbook documents details for every trawl shot, line set or other fishing effort by the vessel such as position, time, total catch; the composition and weight of each catch; and the details of all fish processing carried out on board the vessel. In 1990, the format of the trawl logbooks changed slightly, and was revised again in 2007 as version 3.

Trawl logbooks prior to trip number 1023 (July 1997) were processed by data entry operators at Greta Point. All data were then passed through a validation process before being loaded on

to the **obs** database. Since then, the trawl logbooks were processed by the Ministry of Fisheries and entered into tables in their catch effort system database, until version3 in 2007. Following data entry, logbook data was then transferred to the **obs** database by MFish, up until 2001. Subsequently, the logbook data was downloaded from the MFish 'MOBY' server, by the database administrator from NIWA at the Greta Point site. Since 2007 when version 3 of the trawl catch effort logbook was introduced, NIWA has received zip files from MFish, and subsequently MPI containing the observer trawl catch effort logbook data which is loaded into the load tables of **cod**.

The **cod** database is the major source of length frequency data from commercial fishing operations, and so plays a major role in the stock assessment process. Currently the **cod** database holds information for over 100 species, with the major species including hoki, southern blue whiting, orange roughy, scampi, oreos, ling, jack mackerels, hake, barracouta, and silver warehou.

The New Zealand arrow squid data collected by scientific observers on both squid trawlers and jiggers, originally held in the **squid**, then **obs_lfs** database, is also stored in the c**od** database. The biological data consists mostly of southern arrow squid, *Nototodarus sloanii*, and a lesser amount of *N. gouldi*.

A non-fish bycatch data collection form for Scientific Observers was introduced in 1994, replacing the "Observer Seal Sample Data Sheet". Data recorded on the non-fish bycatch form have been incorporated within the c**od** database. Species that have been recorded and entered into the database include bottlenose dolphin, common dolphin, dusky dolphin, New Zealand fur seal, Hooker's sea lion, leopard seal and a range of seabirds. Data from the "seal" form were transferred from the table *sealtable* in the **obs** database, into the **obs_lfs** database, (covering trips from 541 to 779), and subsequently into **cod**.

Longline vessel data collected by the Observer Programme, beginning in 1993 with the Kermadec Fishery Management Area exploratory research programme, have also been incorporated into the **obs_lfs** database, and now **cod**. This longline data set, predominately bottom long line, subsequently expanded to include ling and toothfish trips. The surface long line data from the **l_line** database is also incorporated in cod.

Data entry for all the catch effort data other than the observer trawl catch effort logbooks is currently carried out by NIWA . This includes the bottom long line data, purse seine and troll, plus set net data which were included in 2009. The observer data from the surface longline fishery are also data entered by NIWA. NIWA also carries out the data entry for almost all the data collected by observers on hard copy paper or plastised paper forms. This includes the length frequency and middle depth biological data forms, non-fish Bycatch forms, plus several bycatch mitigation and gear forms.

Currently, otoliths represent the primary source of ageing material in Marine Research. The Observer Programme provides otoliths from catch sampling, principally for hoki, southern blue whiting, hake, and up until early in the 1992-93 fishing season orange roughy. Additional high priority species include gemfish, ling, stargazers, red cod, jack mackerels, and silver warehou. Many other middle depth species are also sampled to a lesser extent. Otolith inventory data corresponding to the tables t_fish and t_catalog in the age database, for ageing material collected by Ministry observers, are incorporated in **cod**.
Where the biological and associated identifying information recorded on otolith envelopes is not recorded electronically at sea by observers, NIWA transcribes this information from

otolith envelopes and undertakes the data entry of this information to enable these data to be loaded initially to the **cod** tables z_oto_fish and z_oto_catalog.

3 Overall Structure of the COD Database

The initial design of the cod database was developed by an external contractor under contract to the Ministry of Fisheries (MFish) and was modelled on the MFish Catch Effort database. Data structures for new forms have subsequently been added by NIWA to the initial schema.

The Centralised Observer Database is made up of three sets of tables that represent separate database schemas, although they are not implemented as separate schemas. These three schemas are designed to meet the different requirements for data entry and reporting, with different security and locking requirements.

The first conceptual schema is a Load schema (based on the data entry structures, or the source databases) where initial loading of the data takes place, the second is a Staging schema against which any further validation and grooming takes place and thirdly a Reporting schema where the data structures are optimised for reporting based on a data warehouse Star Schema (but developed for a Relational Database)

Observer Load Database schema

The load schema has similar structures to existing data capture databases in tables optimised for data entry.

The database is based on data collection forms, with a number of specific tables mapped on to the existing databases, structures and returns and minimal indexing based on the data entry and validation processing.

The load tables are designed to capture the data as recorded by the observer, without any corrections made to these data, in this schema.

All tables' names in the load schema are prefixed by 'z_'. Tables incorporated from previous databases then incorporate the 3 letter abbreviation for system they are captured from as in the table below.

Databases included

Source	Existing Database	Abbreviation
Observer	obs	trw
Conversion Factor	obs	cnv
Age	age	oto
Length Frequency	obs_lfs	lfs
Bottom Long Line	obs_lfs	bll
Long line	l_line	sll
Non Fish By-catch	obs_lfs	nfb
Reference Data	rdb	ref
System Tables (e.g. controlling returns)		sys
Troll catch effort		troll
Set net catch effort		setnet
Purse seine		ps
Inshore (formerly Cetacean)		ctn

The above table shows the abbreviation, typically 3 characters, incorporated into the table names of the load and stage tables in the cod database which show the origin of the data. For newer data forms such as those for troll data, these were not captured in any database prior to cod. E.g. the table name z_lfs_trawl is from the load schema (based on the table name starting with 'z_'), and from the obs_lfs database (based on the 'lfs_' in the table name).

Purse seine effort data was originally captured in the obs_lfs database in the generic t_station table plus t_purseseine table. This merged the Purse seine catch effort data with those from the purse seine Vessel Activity Log. In the 2009-2010 upgrade of the cod database new tables were created specifically for purse seine data with separate load tables for the data on the Vessel Activity Log and Purse Seince catch effort forms.

Observer Staging database schema

The staging schema is returns based with a number of specific tables mapped on to the existing databases, structures and returns and minimal indexing based on the data entry and validation processing.

In addition the identity and event keying structures are included so that the appropriate keys are generated in order to do the matching and attach errors to the appropriate parts of the returns. The error highest level is defined as 1 for 'should' rules and 2 for 'must' rules, although some earlier implementations simply use 1 level.

Any requirements to add extra value to the data e.g. mapping Observer to Catch Effort Data and adding annotations to the data take place in these tables.

The status will be captured to show where data is and whether it has been groomed and whether it could be linked to Catch Effort, by attaching the equivalent Catch Effort Event Key to the Fishing Event.

All tables' names in the staging schema are prefixed by the letter 'y'.

Observer Reporting database Schema

This schema is based on reporting requirements with a star schema type approach with de-normalised structures and indexes based on all significant key entities (e.g. Species, Fishing Method and Date). Adding mappings to known Fisheries areas i.e. Fisheries Management areas and statistical areas are done in the report schema.

The database contains of a series of Lookup Tables – Dim Tables e.g. Vessel, Species, Method, Date and a series of Fact Tables e.g. Trip, Fishing Effort, Catch with associated detail Fact Tables (e.g. based on the Method for Fishing Effort)

All table names in the reporting schema are prefixed with the letter ‘x’, e.g. *x_trip*.

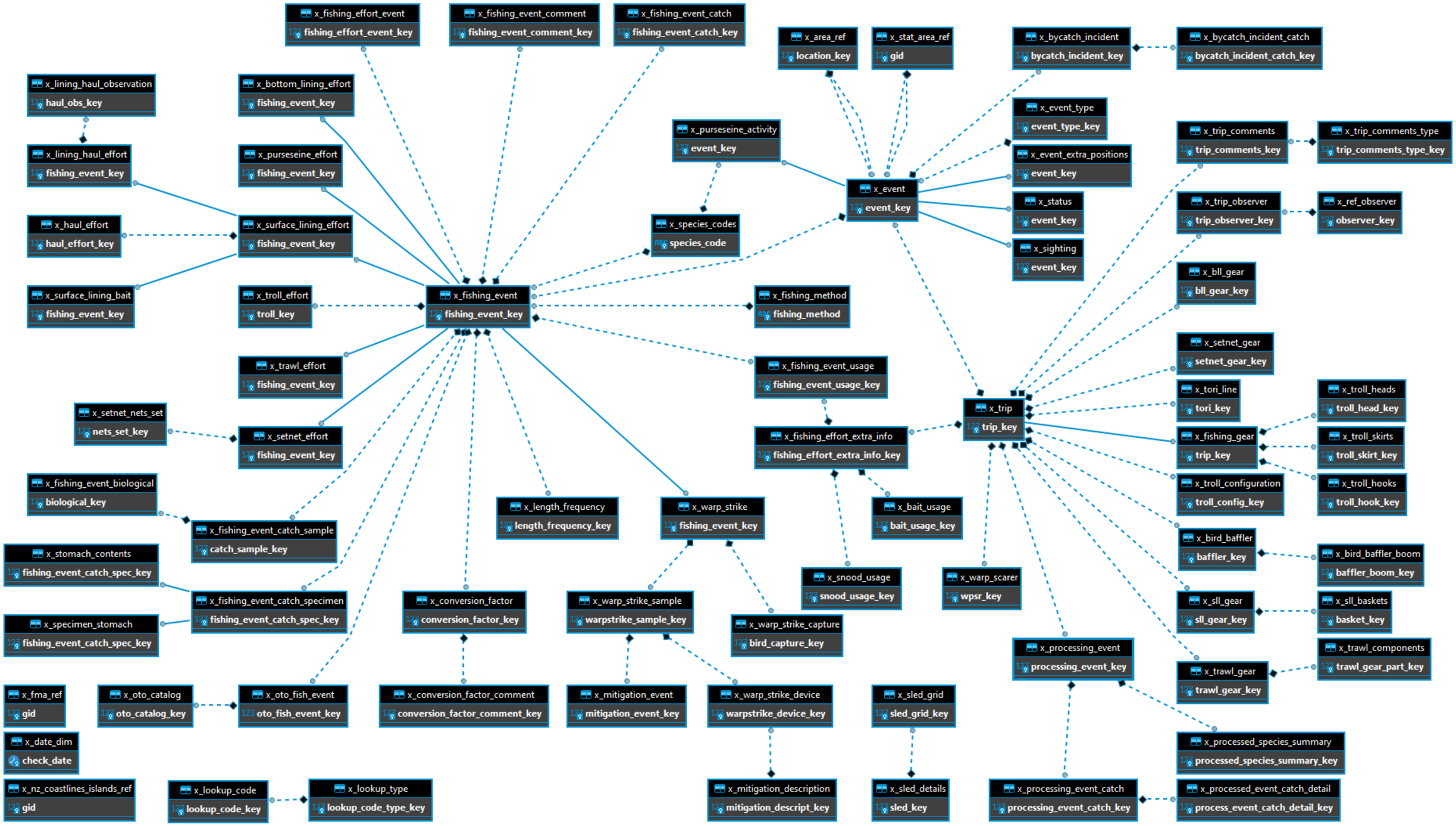

Figure 1: Entity Relationship Diagram (ERD) of the reporting schema of the cod database showing only the primary key attributes for each table

3.1 Table relationships

The **cod** database is implemented in the Postgres Relational Database Management System (RDBMS), but the data structures are valid regardless of the database system chosen.

The **cod** database comprises various related tables. The ERD (Figure 1) shows the logical structure[1] of the reporting tables from the database and its entities (each entity is implemented as a database table) and relationships between these tables. In figure one only the primary keys are shown for each table to enable all tables in the reporting schema to be shown on the one A3 page. For the ERD's for the load and staging tables all the tables' attributes are shown in each ERD.

The primary keys[2] are underlined for each table, and are generally listed in the table listings in section 5 using the format:

Indices: index_name PRIMARY KEY, btree (*attribute* [, *attributes*])

where the index name is the primary key name. The index name for the primary key starts with 'pk_' and is typically followed by the table name. btree refers to the index type. The attribute(s) make up the primary key (the key attributes). Note that the typographical convention for the above format is that square brackets [] may contain more than one item or none at all. A primary key prevents records with duplicate values from being inserted into the table; e.g., a new trip with an existing trip_key.

For example, the primary key for the table x_trip is shown thus:

Indexes: "pk_x_trip" PRIMARY KEY, btree (trip_key)

If an attempt to insert a record with an existing trip_key the record will be rejected and the following message will be displayed:

ERROR: duplicate key violates unique constraint "pk_x_trip"

Some tables also have a unique index which prevents records with duplicate values from being inserted into the table; e.g., a new trip with an existing trip number.

The **cod** database is implemented as a relational database. That is, each table is a special case of the mathematical construct known as a *relation* and hence elementary relation theory is used to deal with the data within tables and the relationships between them. All relationships in c**od** are of the type *one-to-many*[3]. This is shown in the ERD by connecting a single line (indicating 'many') from the child table; e.g., *x_event,* to the parent table; e.g., *x_trip,* with an arrowhead (indicating 'one') pointing to the parent. For example, consider the relationship between the tables, *x_trip* (the parent table) and *x_event* (the child table).

Any one observer trip in *x_trip* can have one or more stations in *t_event,* but any one station can only be a part of one observer trip. Note that the word 'many' applies to the possible number of

[1] Also known as a database schema.
[2] The primary key is an attribute or combination of attributes whose values are unique for that record.
[3] A one-to-many relationship is where one record (the *parent*) in a table relates to one or many records (the *child*) in another table; e.g., one trip in *x_trip* can have many stations in *x_event* but any one station can only come from one trip.

records another is associated with. For a given instance, there might be zero, one, two, or more associated records, but if it is possible to have more than one, we use the word ‘many’ to describe the association.

Note that the one-to-many relationships can be either mandatory or optional. The ERD’s in cod do not show if each separate relationship is mandatory or optional, however in most relationships shown the parent table is mandatory and the child table is optional. The optional relationship means that a record does not have to have any associated records. Conversely, the mandatory relationship means that a record has to have at least one associated record. For example, if we consider again the one-to-many relationship between the tables *x_trip* and *x_event*, which has a mandatory ‘one’ and an optional ‘many’. This means that one trip record can have zero or more (many) stations within it, but one station must have one, and only one, associated record in the trip table.

These relationships are enforced in the database by the use of foreign keys[4]. Constraints do not allow orphans to exist in any table; i.e., where a child record exists without a related parent record. This could potentially happen when:

i. a parent record is deleted;
ii. the parent record is altered so the relationship is lost;
iii. or a child record is entered without a parent record.

All constraints in **cod** prevent these from occurring.

Foreign keys typically reference the primary key in the parent table, and in the report schema this is always the case. In Figure 1 showing the ERD of the report schema the columns or attributes that the tables join on are not shown alongside the arrows as in the other ERDs, because the attributes used to join columns can be determined from the primary key in the parent table. In the other schemas particularly the stage schema the foreign key may reference the parent table via the parent table’s primary key or another attribute or combination of attributes that have a unique index on them. These attributes forming the foreign key are shown alongside the arrows in the corresponding ERDs for the load and stage diagrams.

Constraints are shown in the table listings by the following format:

Foreign-key constraints:
"constraint name" FOREIGN KEY (*attribute*[, *attribute*]) REFERENCES *parent table* (*attribute*[, *attribute*]) action

For example, consider the following constraint found in the table *x_event*:

Foreign-key constraints:
"fk_x_event_x_trip_ev_x_trip" FOREIGN KEY (trip_key) REFERENCES x_trip(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT

This means that the value of the attribute *trip_key* (that is, one trip) in the current event record must already exist in the parent table *x_trip* or the record will be rejected and the following message will be displayed:

ERROR: insert or update on table "x_event" violates foreign key constraint "fk_x_event_x_trip_ev_x_trip"

[4] Also known as integrity checks.

DETAIL: Key (trip_key)=(*value*) is not present in table "x_trip".

The tables in the load schema are designed to take data as supplied before corrections are made to the data (if required), which means that not all expected constraints, particularly foreign keys, can be enforced in the database design for these load tables. Due to this design requirement to accept data as supplied and problems with some historic data that does not meet the expected data integrity rules for the staging and report schemas, some foreign key constraints are not be implemented at in the load schema. This results in tables shown in some figures with no arrows showing their relationships to other tables. and hence some of the figures showing load tables are not referred to as ERD's because they do not show table relationships.

Many tables in this database are indexed. That is, attributes that are most likely to be used as a searching key have like values linked together to speed up searches. These indices are listed using the following format:

Indices: index_name btree (attribute [, *attributes*])

e.g.

Indexes:
"ndx_x_event_start_date" btree (event_start_date)

Note that indices may be simple, pointing to one attribute, or composite pointing to more than one attribute.

3.2 Database Design

All reporting tables in the cod database have a system generated single attribute as the primary key. The top-level table in this database is *x_trip*, which contains records for each observed fishing trip. Each trip record has a unique system generated attribute *trip_key*, which is the primary key for this table.

Each trip can either have many tows or sets from which fish were sampled, linking *x_trip* to *t_event* with a one-to-many relationship. Each tow/set has an attribute *event_key*, as the primary key for this table. The attribute *start_obs_fma* lists Fisheries Management Area (FMA) codes, and should be a foreign key to the table *x_area*. The foreign key that references the table *x_area* is not shown on the ERD, and similarly foreign keys for the attribute species are not shown because species code occurs in many tables and should reference the table *x_species_codes* to make sure that only valid codes are inserted into these attributes. It would be difficult to show a foreign key constraint to *x_species_codes* in the ERD from the many tables required.

Each species sampled from a tow or set produces a record in the table *x_fishing_event_catch_sample* , which contains weights for the sample and the catch.

Length frequency and gonad staging records are held in the table *x_length_frequency.* Users are advised to consider selecting data from stage table *y_lfs_length_frequency* which retains the trip_number and tow_number attributes that are not present in table *x_length_frequency*.

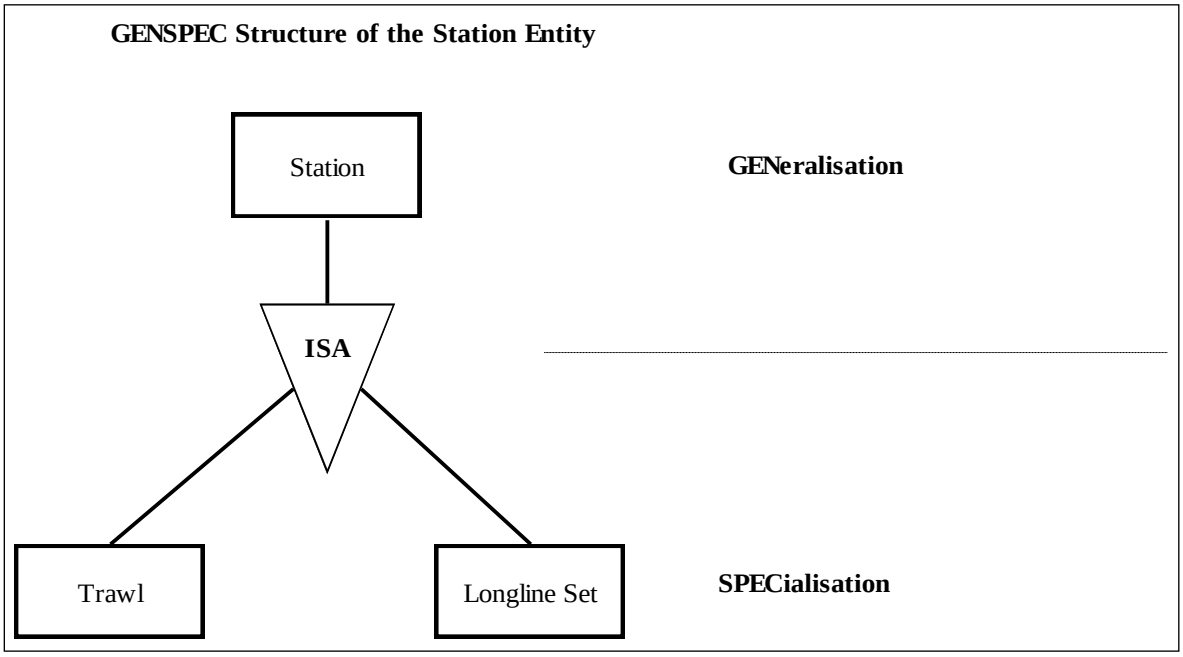

Figure 2: GENSPEC diagram for Trawl and Longline station data

3.3 Generalised station data

The inclusion of observed longline trips in addition to trawl trips into the **obs_lfs** database required modifying the database to store station data from several sources. A powerful abstraction called generalisation, that allows objects of different types to be considered as examples of a higher-level set, was employed for this purpose; e.g., a trawl and a longline set, are seen to be examples of a station. This can be represented by the GENSPEC structure (GENeralisation / SPEcialisation) seen in Figure 2.

The generalisation and specialisation are pictured using a triangle containing the words “IS A” to connect the components to each other and to the higher-level entity. The generalized higher-level entity, implemented as the table *z_lfs_station* contains the common attributes of all examples of a station; e.g., date, start and finish time, latitude, longitude, etc. The specialised entities, implemented as the tables *z_lfs_trawl* and *z_bll_line* contain only attributes relevant to their specific types. For example; headline height is stored in *z_lfs_trawl*, number of hooks is stored in *z_bll_line*. The attributes of the higher-level entity are "inherited" by the lower-level ones. Specifically, this can be achieved by views, which join the higher- and lower-level entities together. These views are not implemented in cod.

This GENSPEC structure is applied to other methods as they have been added to the databases **obs_lfs** and more recently **cod**, including e.g. purse seine.

3.4 Trawl

Trawl caught fish make up the bulk of length frequency data stored in the c**od** database. Data collected by various industry agencies are now held in the **cod** database, as recorded in the attribute origin_code in the *y_observer_trip_master* table. Current origin codes are listed in Appendix 1. As mentioned, scientific observers on board trawl vessels collect information on catch and effort, which is recorded in logbooks. Observer Programme logbook data were

previously stored in detail in the **obs** database. For the tows where length frequency samples have been taken by MFish observers a sub-set of relevant station data were stored in **obs_lfs**. The concept of the Centralised Observer Database provides all the station data within the one database, therefore there is no sub-set of sampled station data in the report tables. Similarly sampled stations are no longer inserted into the table *y_lfs_station*, but historic data is still contained in this table as in the **obs_lfs** database. For each species sampled, green weight and method of weighting are extracted from the relevant greenweight table, and stored in the *y_lfs_general_catch_sample* table, along with the sample weights and their method codes recorded on the length frequency forms.

Trawl data sets collected from sources other than the SOP, such as industry data e.g. from fishing company observers do not have logbook data stored in the **obs** database. Only the relevant details as required for sampled tows were held in the **obs_lfs** database, and now the **cod**.

Industry collected data includes the Trawl, Catch, Effort and Processing Return (TCEPR) number and then the shot number per TCEPR form for each trip. To retain compatibility with the existing data structure, industry sampled tows were assigned a station number sequentially from 1 for each trip, as it was not possible to derive the actual tow number from the data. The TCEPR and 'shot number' along with assigned station number by trip were stored in a reference table *t_tcpern*, accessible by the database administrator. This table has not been incorporated into cod.

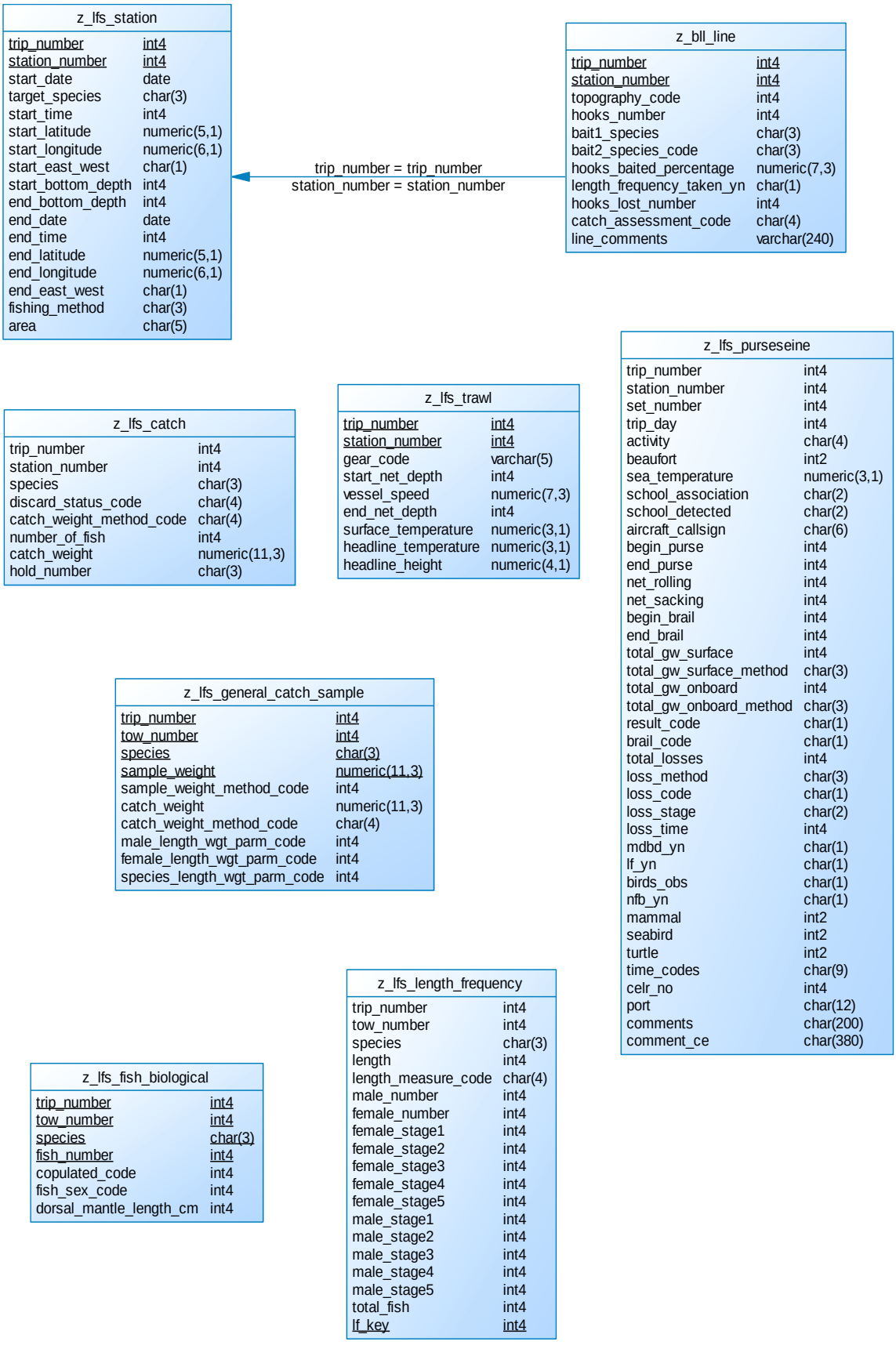

Figure 3: Diagram showing load tables from the obs_lfs database

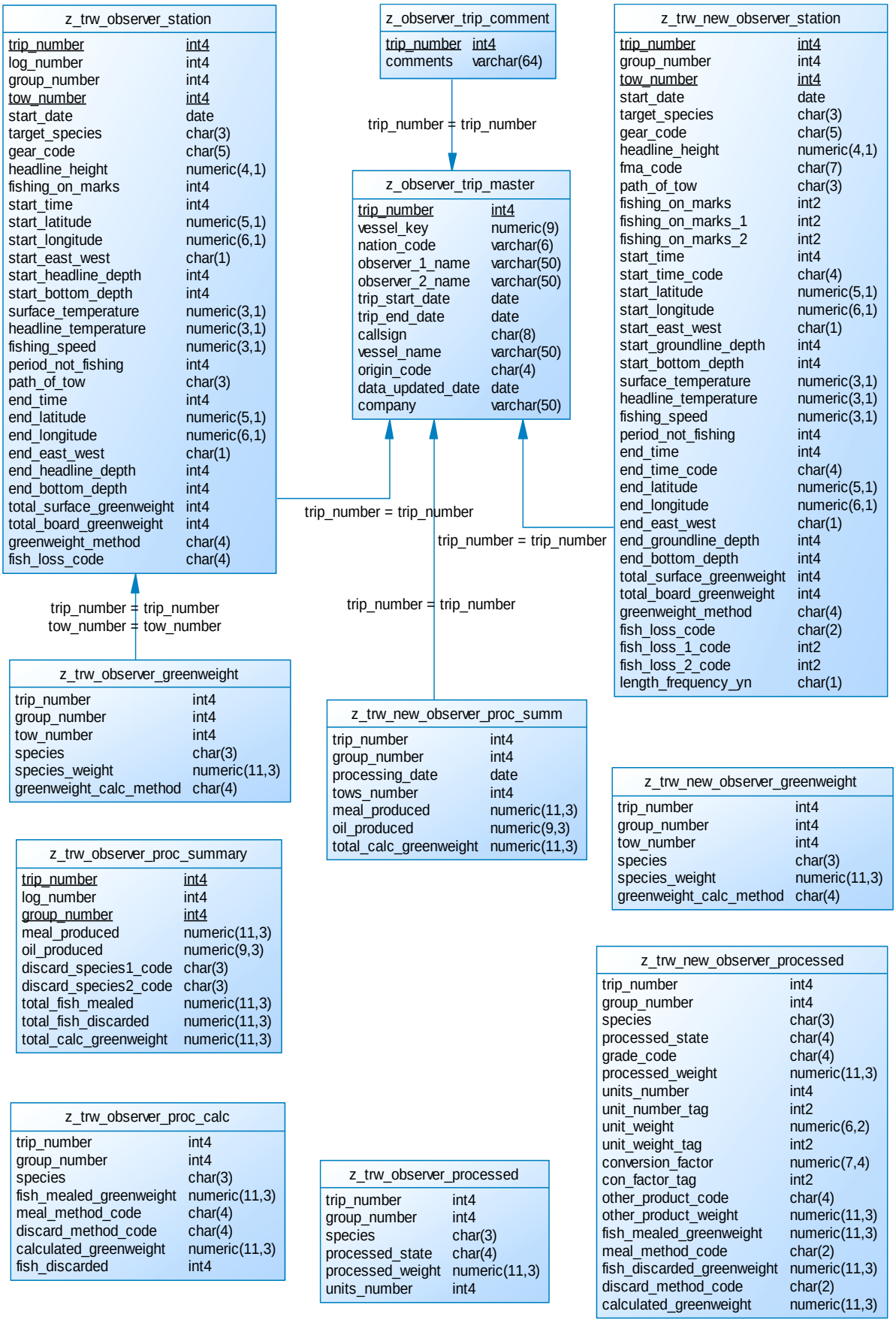

Figure 4: Diagram showing the load tables that originated from the obs database.

In 2007 the Observer Trawl catch Effort Logbook was revised resulting in ‘Version 3 July 2007’. New load tables have been implemented in **cod** for data from this logbook, typically received electronically by the data manager, NIWA, plus tables designed to accommodate observer data recorded electronically at sea including electronic length frequency data.

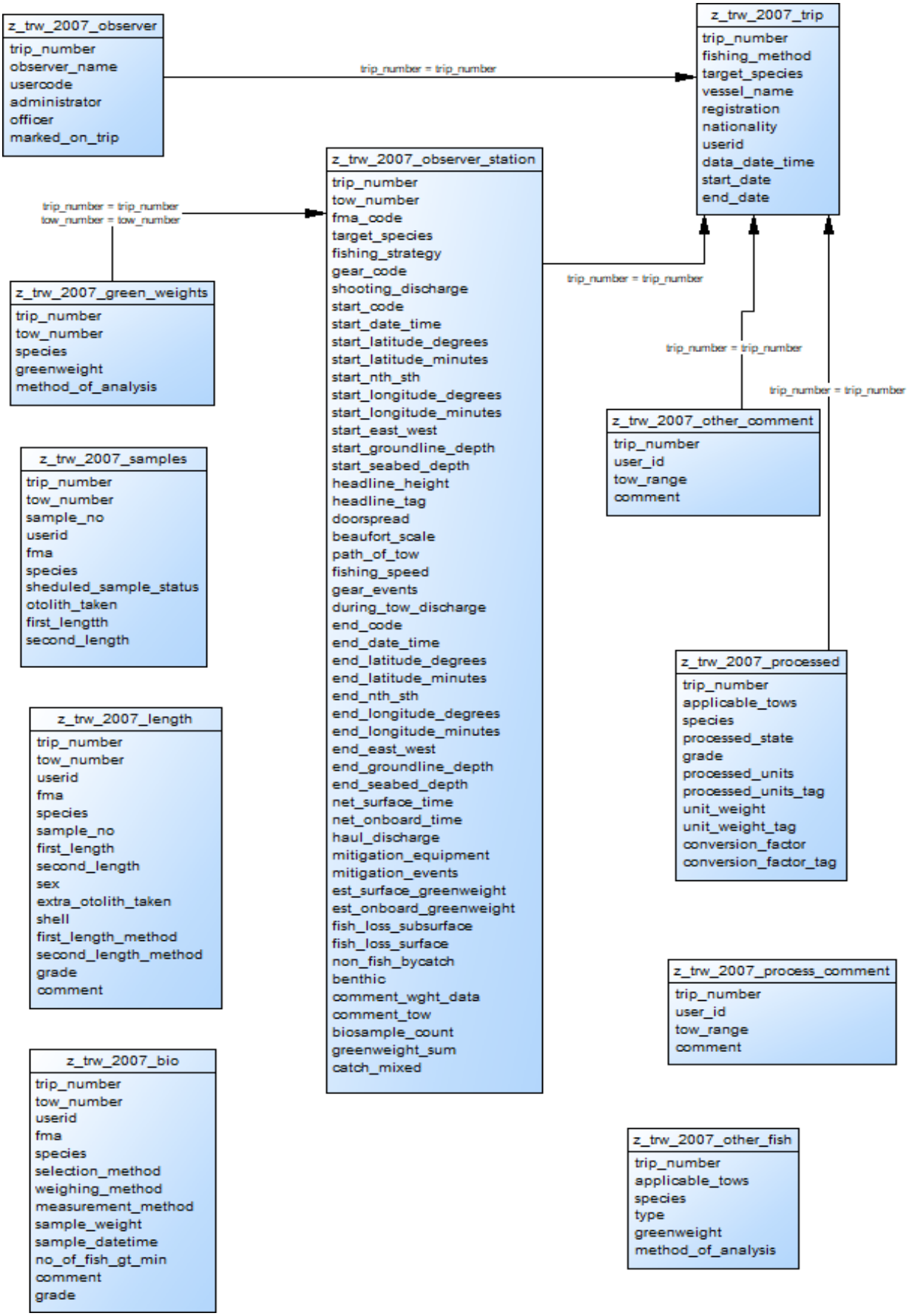

Figure 5: Diagram showing tables for data from Version 3 of the catch effort logbook including electronically captured length data.

3.5 Conversion factor data

A conversion factor is a number which is multiplied against the weight of the processed fish to derive the whole weight (greenweight) of the fish before any processing occurred.
Observers have collected data on conversions factors since the beginning of the observer programme on paper forms. This morphed into an Excel version which copied the layout of the paper forms, which were printed out and data entered by NIWA, in the same way the original paper forms were keypunched. In 2018 electronic data collection for conversion factor data was incorporated into the ODEAS tablet software and an Excel conversion factor form developed from which data could be reliably captured for loading to cod as a backup format. Additional data fields were added at this time to record the number of 5 different types of non compliant cuts.
Tables were renamed at load and stage changing plural to singular and dropping the 'new' from cnv table names, namely:

z_cnv_surimi_conversion_factors renamed to z_cnv_surimi_conversion_factor,
z_cnv_new_conversion_factors renamed to z_cnv_conversion_factor,
y_cnv_new_conv_factor_comm renamed to y_cnv_conv_factor_comm.
y_cnv_new_conversion_factors renamed to y_cnv_conversion_factor

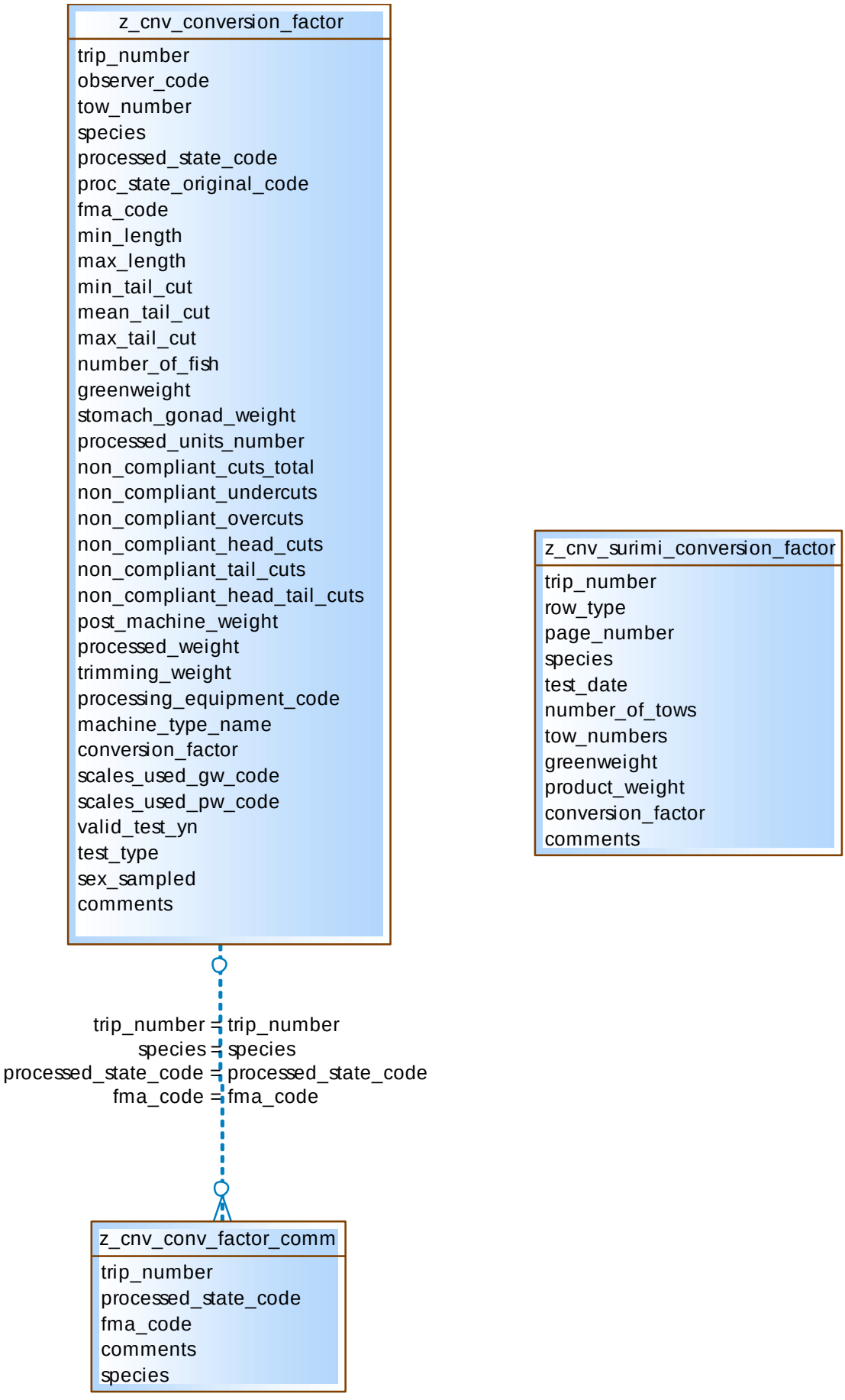

Figure 6: Diagram showing the load tables for conversion factor data.

3.6 Bottom Longline

The SOP longline trips did not have catch and effort logbook data stored in the **obs** database. Therefore all the set and catch details recorded on the set form were stored directly into the **obs_lfs** database, unlike trawling trips, where only a sub-set of trawl station data with length frequency samples was stored in **obs_lfs**. For longline trips, each set is stored initially in *z_lfs_station* and *z_bll_line*, with the catch for each set (if any) stored in *z_lfs_catch*. For each set, each species that has been sampled will have a *z_lfs_general_catch_sample* record and one or more *z_lfs_length_frequency* records (the same as for trawl caught length frequency samples).

A new suite of bottom longline forms were introduced in 2017 (trip 5746). This consisted of separate forms for gear, setting, hauling and catch, whereas previously there was a single form. A gear form is completed for each unique gear configuration used during a longline trip. For each set of a longline, setting, hauling and catch forms are completed. Each setting form records the gear configuration as described in the gear form. These data are loaded initially to the tables *z_bll_gear*, *z_bll_set*, *z_bll_haul* and *z_bll_catch*. After validation, these data are migrated to *y_bll_gear*, *y_bll_line*, *y_lfs_station* and *y_lfs_catch*. The table *y_bll_line* takes details on how the line was set from both *z_bll_set* and *z_bll_haul*. Likewise, the table *y_lfs_station* takes details, such as date, depth and position of the line from *z_bll_set* and *z_bll_haul*. Table *y_lfs_station* now includes spatio-temporal details of four points in time; start setting, end setting, start hauling and end hauling. The previous BLL forms included details for only the start of setting and start of hauling.

3.7 Non-fish bycatch

** Non-fish bycatch data is replaced by Protected Species Interactions data since 2019.*

Data recorded on the non-fish bycatch form are stored in the table *z_nfb_nonfish_catch* (Figure 6).

On the earlier non-fish bycatch form, the position (latitude and longitude) and time of capture were recorded, if known. It is then possible to define at which point in the trawl or set the 'incident' occurred. It is also possible to have separate incidents for the same station, distinguished by *time_c* (time caught attribute). Observers can often ascertain the time of capture of a non-fish species, for example at the end of a tow, in which case the capture positions will be the same as the end of the tow. In cases where the position and time caught were not known, the position and time caught fields in the *y_nfb_nonfish_station* table are null. The start, end positions, and times of tows or sets are held in the corresponding station table.

The *z_nfb_nonfish_station* table also stores data specific to non-fish bycatch and environmental data requested on the previous non-fish bycatch form, along with some additional data from the log-book data (**obs** database), which was requested for non-fish captures and not stored elsewhere in **obs_lfs**.

With the introduction of the 2007 version 3 of the catch effort logbook, and the new non-fish bycatch form, specific station data for non-fish bycatches is no longer recorded, and the corresponding table for all stations for the trip should be referred to.

The *z_nfb_nonfish_catch* table stores a record for each specimen caught. The species and sex recorded by the observer are stored in fields *observer_species* and *observer_sex_code*. As observers do not record the sex of birds, *observer_sex_code* will be null for marine birds. The

species and *sex_code* fields are used to enter positive identifications (as obtained from subsequent autopsy reports where available); these two fields are otherwise left null.

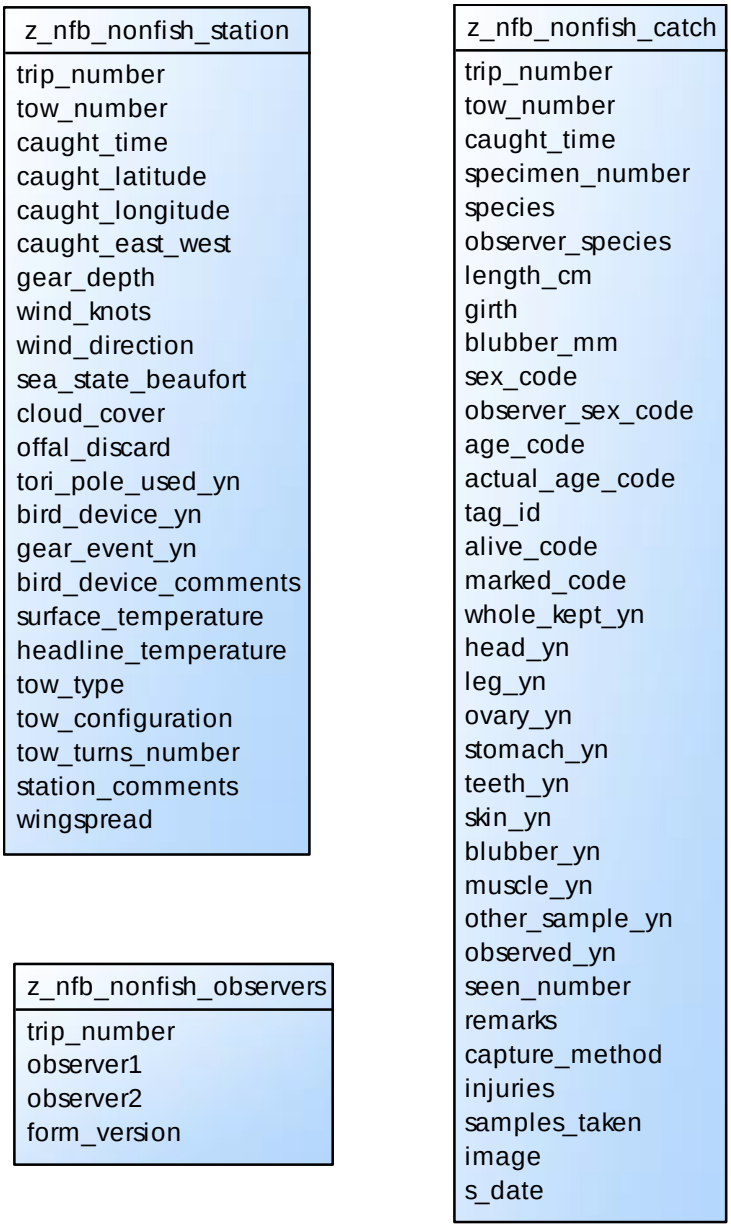

Figure 7: Diagram showing the Nonfish bycatch load tables.

3.8 Protected species interactions

The **Protected Species Interactions (**PSI**)** return type was introduced in 2019 to replace the non-fish bycatch data type. PSI data is collected on paper form, electronic spreadsheet, and ODEAS tablet device. Every trip must indicate if protected species interactions took place or not – a binary Y/N flag (set to NULL for trips before PSI data was collected). The flag is recorded in table *z_nfb_psi_trip* for paper forms and electronic worksheets, and in table *z_trw_2007_trip* for ODEAS tablet data. Whether or not there are interactions, the flag is set and migrates to *y_observer_trip_master* and to *x_trip*. Where interactions are recorded, details of each animal are recorded in *z_nfb_psi*, irrespective of return type, and migrated to *y_nfb_nonfish_station* and

y_nfb_nonfish_catch, and then to x_bycatch_incident and x_bycatch_incident_catch. A value of '-1' is used in the station_number field for records which cannot be matched to a particular station (e.g. a bird deck strike while steaming between stations).

3.9 Purse Seine Observations

Observer coverage of purse-seine fishing trips commenced in December 2004.

The observers fill in two forms that capture effort information. The "Vessel Activity Log" that records all the various activities undertaken by the vessel during a trip, the activities include events such as 'No fishing – bad weather', 'Searching (for a school)' and making a set, 'Set (fishing activity)' i.e. the net is deployed. If the purse seine net is set, (Activity code =1), a separate "Purse Seine Catch Effort Set Details" form is also completed. An example trip consisted of 626 activity events and 29 sets (fishing events).

Details from the purse-seine forms are stored in the load tables *z_ps_activity, z_ps_set* and *z_ps_catch* and the corresponding stage database tables.

In the report tables, information from the Activity Log is held in the *x_purseseine_activity* and *x_event* tables. Any purse seine sets, will also have the additional set detail information, stored in the *x_fishing_event* and *x_purseseine_effort* tables. The event_type_key attribute in the *x_event* table, will be one of two types, either an activity other than a set (type 41) or a fishing event activity, when the event is a set (type 42). There is an overlap of data collected on the two forms apart from the set number; target species, FMA, spotter plane call-sign, school details, Beaufort scale / Sea State and the position details, this repeated information is only stored separately in the load tables (retaining any discrepancies), except 'target species'. Target species is an attribute in *x_fishing_event,* how-ever target species is also recorded on the activity log for rows that are not stored in *x_fishing_event,* e.g. searching for a school, therefore target species is repeated in *x_purseseine_activity*. To retrive all the set effort details, each of the four report tables above would need to be accessed.

Each row of information recorded on the Vessel Activity Log is assigned a system generated sequential station number. A set number is recorded by observers when a set is made to identify each set, thus the station number is separate to the set_number, which is stored in the sequence_number field in the *x_fishing_event* table. Catch data is entered into the *x_fishing_event_catch* table. As purse-seine vessels only set their nets when a suitable school of fish has been localted, not all observed trips have fishing-event records.

Figure 8: Diagram showing the load tables for purse seine data.

3.10 Squid

The data collected by scientific observers on New Zealand arrow squid from both squid trawlers and jiggers, up to the end of the 2000/2001 fishing year, were held in a separate **squid** database. Both the **obs_lfs** and **squid** databases stored sub-sets of station data collected by scientific observers, hence the squid data were incorporated into the **obs_lfs** database, and now **cod**.

Station data from the *t_station_squid* table in the **squid** database were inserted into the GENSPEC structure for station data in **obs_lfs**. Attributes common to all station types are now stored in the *x_event*, and *x_fishing_event* tables. The specialised attributes from the *t_station_squid* table are now all stored in the *x_trawl_effort* table; this includes data from both squid trawlers and squid jiggers. The squid jiggers can be distinguished in the same fashion as previously, using fishing method code. The information that was stored in the gear_meth attribute, in the *t_station_squid* table, is now held in the fishing_method attribute in *x_fishing_event*.

Weight data stored in the *t_station_squid* table in the **squid** database, were inserted to the *t_general* table in the **obs_lfs** database and the corresponding *z_lfs_general_catch_sample* table in **cod**. The total estimated green weight of squid stored in the attribute *species_weight*, was stored in *catch_weight* attribute of *t_general* in **obs_lfs** and similarly in **cod**. The weight of measured squid, from the *wt_meas* attribute, is stored in *sample_weight* attribute of *z_lfs_general_catch_sample*. The total number of squid measured, stored in *no_meas* was not transferred to **obs_lfs**, as this number can be derived from the individual squid measurements. The species code in the *t_general* table and the corresponding table *z_lfs_general_catch_sample* in **cod** were set to "SQU", for all squid samples because the total estimated green weight in the *t_station_squid* table, was summed from SQU, NOS & NOG codes. (Species code was not an attribute in the *t_station_squid* table). The *sample_weight* as recorded on the squid length frequency form, should refer to one species, because a new page should be completed for each species sampled by the observer. This was not maintained separately in the **squid** database. In practice, there are only two trips where both NOS and NOG (*Nototodarus sloanii,* and *N. gouldi)* have been sampled from the same station. Trip 512; there are 39 samples where the sample weight was combined, and trip 51 there are 2 stations, where it is unknown how the weight was recorded, but there was only one specimen of NOG in each of the two tows. For all other samples, the sample weight therefore refers to the only species sampled for the station.

The biological data for individual squid specimens and other individual fish are held in the table *x_fishing_event_biological*. Previously, this was the table *t_fish_bio_asq* in the **squid** database.

3.9.1 Squid Jigger Technical Specification

The **squid** database also contained technical data on most licensed and some foreign chartered and domestic squid jiggers fishing in New Zealand waters. This information mainly covers the period from 1978 to 1988, with very little new information since 1988. The latest data are for the 1990/1991 fishing year. These data are held in the load table *z_jig_specs* only in **cod**.

3.11 Surface longline

From 1987 New Zealand placed fishery observers on selected foreign-licensed and some domestic-chartered Japanese vessels in the southern bluefin tuna fishery. Initial coverage was very low (less than 1% of sets made in 1987 and 1988) and confined to the East Cape area in June-July. Since 1989 the geographic and temporal coverage has been more even, with the addition of observers south of New Zealand.

At time of publication this programme is on going, with emphasis on all species of tuna as well as billfish, sharks, birds, and seal catches.

These data were captured in the **l_line** database and are now incorporated in **cod.**

There were problems with unique trip numbers, or more particularly trip number and set number combinations that were not unique with trips in the early years of the surface longline observer dataset, caused by the same trip number being assigned to more than 1 trip. The data managers at the time solved this by creating a new trip number column numbered sequentially from 1 onwards. To incorporate these data from the l_line database into cod, it was necessary to assign unique trip numbers across the entire observer program trip series, so where required numbers were assigned in the range 30001 to 31849 to some early longline trips.

The *z_sll_trip* table holds the trip number assigned by the data manager in the **trip_number** attribute and the trip number assigned by MFish and subsequently MPI Observer services in the **obs_trip_no** attribute. Initially all other surface longline load tables use the trip number assigned by the data manager, up to about Ministry trip_number 3297 when the observer services trip number is used in the other sll load tables. The MFish or MPI trip number is used in all the stage and report tables.

In 2018 new Surface Longline (SLL) forms were developed, and the data from these these forms were recorded in cod. These forms included a new Surface longline gear form, and revised Longline setting log and Longline hauling log forms. These resulted in new tables being added to cod for z_sll_2018_* and y_sll_2018_* tables, as listed in section 5 of this document. The first trip_number assigned to use these 2018 sll forms was trip 5343. There were 3 documented versions of these forms, so some columns from the earlier versions are null for all but a few trips.

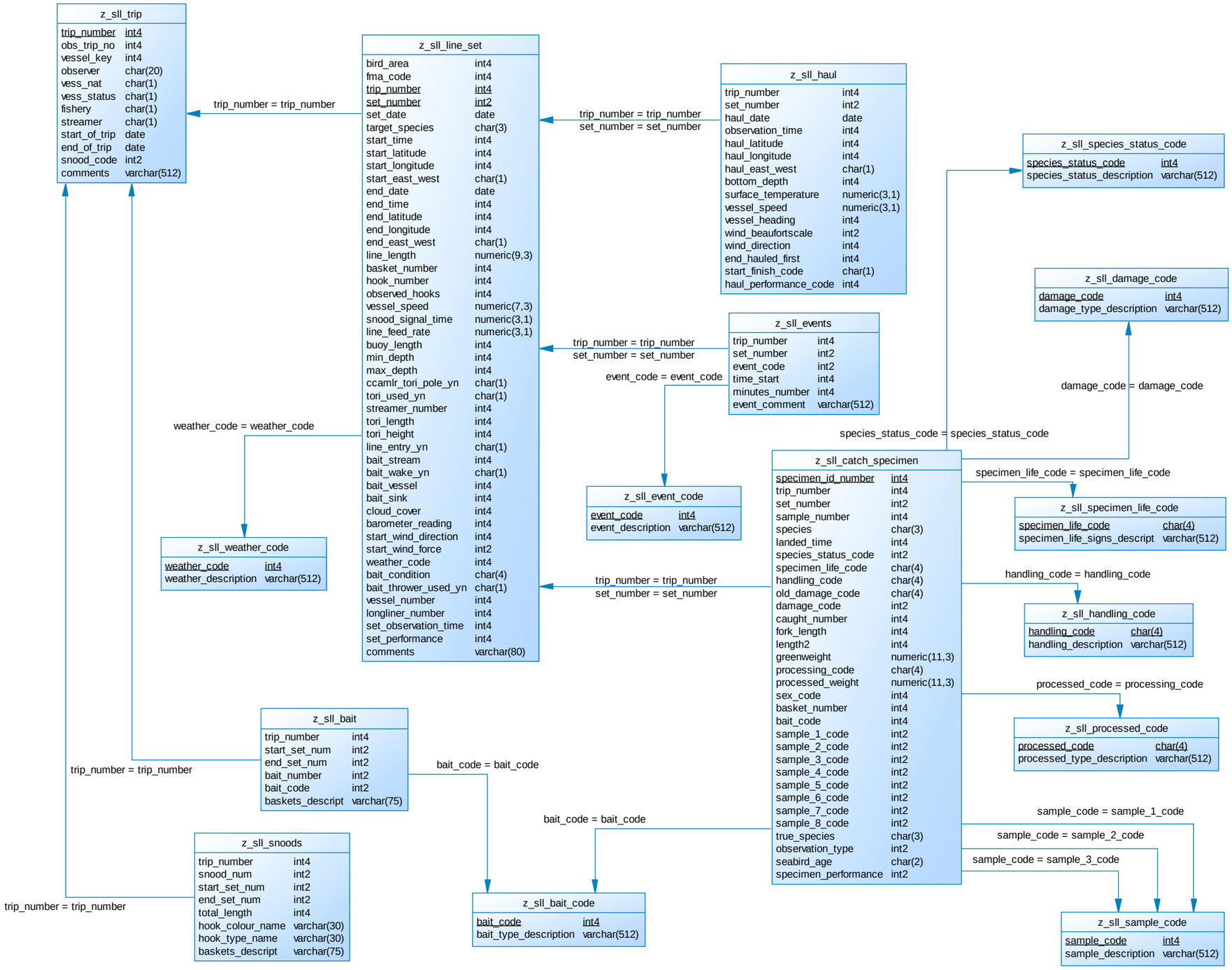

Figure 9: ERD of the load tables from the l_line database.

3.12 Trolling data

New forms for observers to record catch effort and related data on trolling trips (such as trolling for tuna), were introduced in 2008, using version 1 of the forms dated 1-Dec-2006.

Tables for these data have been developed in cod, comprising in the load schema, 11 tables, including *z_troll_hourly* for hourly observations, *z_troll_activities* for the activities and *z_troll_catch* the catch recorded on each hourly form. The trolling fishing gear form data is stored in the *z_troll_gear* table, with the 3 associated associated tables; *z_troll_heads, z_troll_hooks, z_troll_skirts*. The temperature calibration form information is stored in the *z_troll_temperature* and *z_troll_calibration* tables. The trolling line configuration information is stored in the table *z_troll_configuration.* The *z_troll_diagram* table is designed to store the length and line offset of each line on the diagram, but this is not implemented at this time.

There is a corresponding stage table for each of the trolling load tables, except for the troll diagram.table. See the corresponding ERD for the troll load tables in figure 10.

Report tables dedicated to trolling data are; *x_troll_effort, x_troll_configuration, x_fishing_gear* and its 3 associated associated tables *x_troll_heads, x_troll_hooks, x_troll_skirts*. General effort information is stored in the tables *x_event, x_fishing_event* and *x_fishing_effort_event* that holds the activities records from each hourly form (from . *y_troll_activities*). Catch data is stored the *x_fishing_event_catch* table.

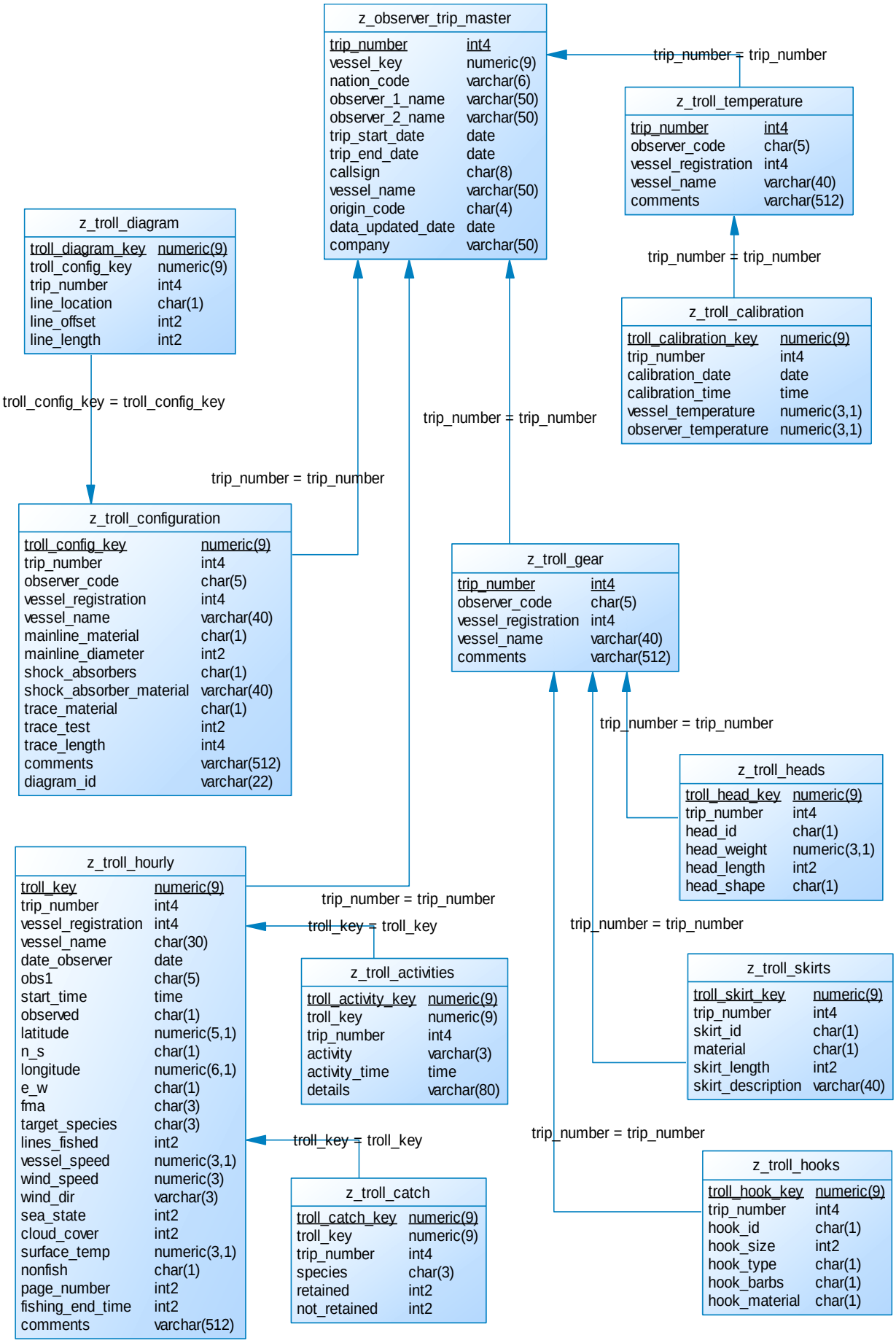

Figure 10: ERD showing load tables for the trolling data forms.

3.13 Seabird Warp Strike Observations

A sampling programme to collect "Seabird Warp Strike Observations in New Zealand trawl fisheries" was implemented by the observer programme in January 2005 for the Squid fishery. Tables to store the data collected were created in the **obs_lfs** database (March 2006) and the data from 2005 onwards is loaded into these tables.

There are five related reporting tables used to store the Seabird Warp-Strike Observations data in **cod**; *x_warp_strike* holds the descriptors of the trawl being observed, *x_warp_strike_sample* stores seabird warp/mitigation device strike observations and bird abundance data for each "fifteen-minute" sample period**.** The table *x_warp_strike_capture* stores the total numbers of seabirds recovered from warps, net, mitigation devices or unknown sources for the whole tow. The table *x_warp_strike_devices* stores details of any mitigation devices or methods used during an observation sampling period and the table *x_mitigation_description* holds a detailed description for each distinct 'brief' description of mitigation devices or methods stored in the *x_warp_strike_device* table. Several fields that are recorded at the trawl level on the form are stored at the sampling level in the database; 'observer initials' as cases of two observers undertaking independent observations (recorded on separate forms) for an individual trawl have occurred and the 'side observed' field, although instruction are for the same side to be observed for the whole trip, observations have been carried out on both the port and starboard sides during a single tow.

There have been various versions of the form "Seabird Warp-Strike Observations (Trawl)", with changes to information collected, therefore some attributes are not always populated in the database. The large and small bird abundance counts were initially recorded as one of four ranges on the first version of the form. While large_range and small_range fields for the later forms are populated from the counts in large_birds and small_birds on later versions of the forms, actual abundance numbers for the earlier forms obviously cannot be derived and remain null. Recording of sprags on each warp and grease on warps are not recorded on the 18/01/2006 version of the form. The pre-recorded devices on the forms have changed, only 'tori line' and 'bird baffler' are recorded across all versions. The 18/01/2006 version of the form added a "To specification?" question for 'tori line', 'warp scarer' and 'bird baffler', this information has been incorporated into the deployed code for each device. The tori line details of length, height and "number of streamers" is no longer recorded on the latest form.

Note there are fields in this dataset where observers have not recorded data or not answered questions, that could be interpreted as zero or a continuation of previous entries for the same field, these fields have been retained as nulls, as it would not be possible to later distinguish such changes and therefore it is left to individual users to make their own interpretations. Errors that can be changed with certainty, such as dates or times are corrected. Note the 2005 data was loaded from electronic data supplied to NIWA from the Ministry of Fisheries.

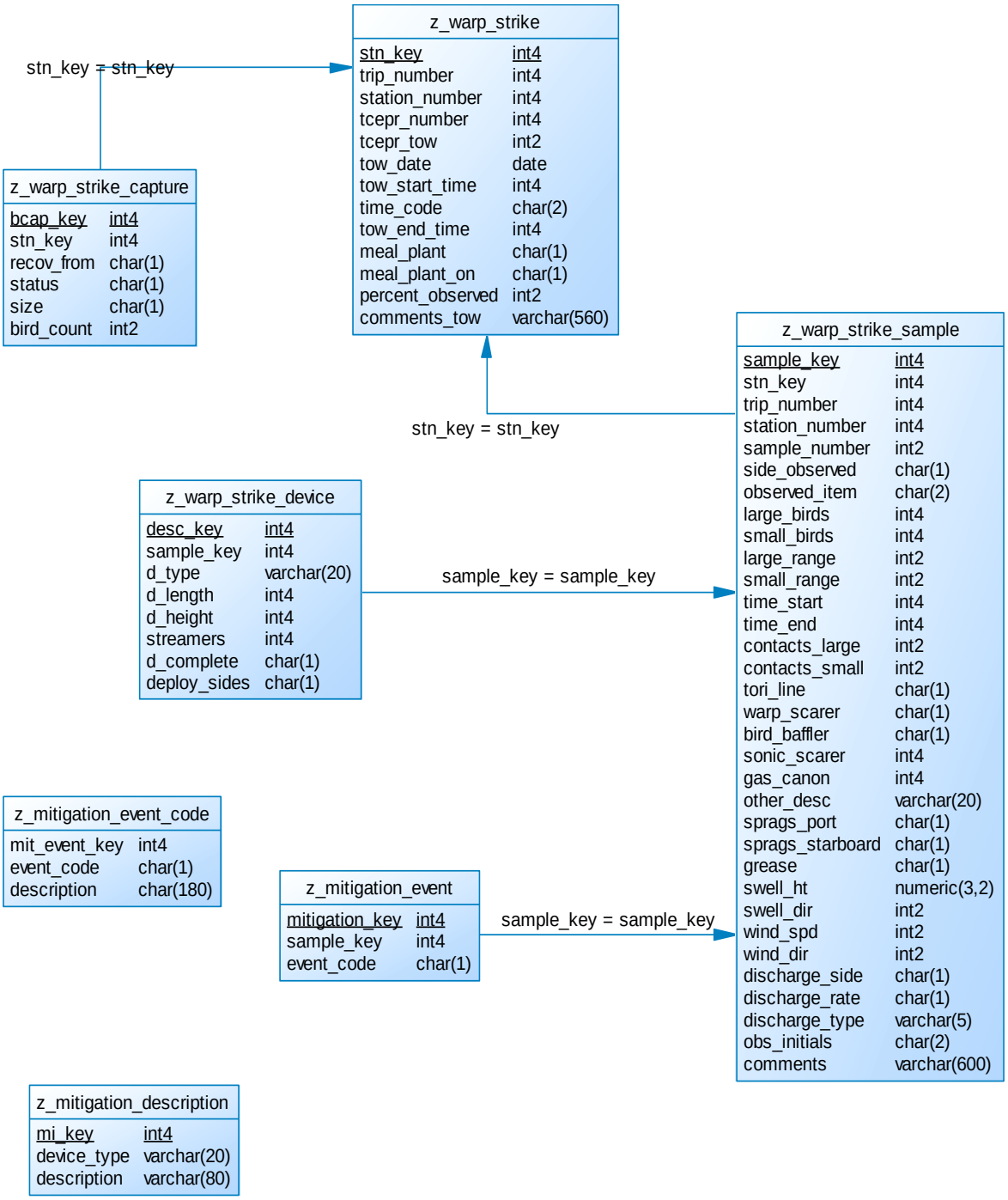

Figure 11: ERD for load tables for the seabird warp strike data

3.14 Other mitigation devices and fishing gear forms

SLED (Sea Lion Exclusion Device)

These are devices that are attached to trawl nets to allow sea lions or other marine mammals to escape from the net while fish are caught. In order for the SLED to work effectively it is important that its measurements fit the specifications. For example, if the bar spacing is too large, it may be possible for a young sea lion to squeeze between the bars, and drown in the codend.

The initial Observer SLED Details Form is labelled 'Version2 – Dec 2006', and tables have been incorporated in cod in 2008 to capture all data from this form type.

Tori line

A Tori line is one of three devices which are collectively referred to as seabird scaring devices (the others being bird bafflers and warp scarers). Seabird scaring devices are used to deter seabirds from interacting with trawl warp cables or other fishing equipment. As of April 2006 all trawlers greater than 28 metres should use a seabird scaring device while fishing.

Tori lines are lines with streamers that are attached to the stern of a vessel above warp lines or deployed long lines. Seabirds are deterred by the flapping streamers and avoid flying close enough to the streamers to hit the lines or hooks. In order for the tori lines to work effectively it is very important that its measurements fit the specifications.

The Observer Tori Line Details Form was designed for recording the details of tori lines. The initial Tori Line Details Form is labelled 'Version 1 - Jan 2007' and tables have been incorporated in cod in 2008 to capture all data from this form type. A new version of the tori line form was introduced in 2018.

Bird baffler

A Bird Baffler is another of the devices which are collectively referred to as seabird scaring devices. The Observer Bird Baffler Details Form is designed to collect information specifically about Bird Bafflers. A bird baffler is a construction where two or more booms are attached to the stern quarter of a vessel. These booms extend outwards from the side or stern of the vessel and have a number of drop lines (droppers) with brightly coloured plastic (or similar) objects hanging vertically from them. The combination of booms, droppers and objects form a visual barrier that deters seabirds from interacting with fishing gear.

The design and size of the bird baffler is critical to its success as a mitigation device. The initial Bird Baffler Details Form is labelled 'Version 1 – August 2007', and tables have been incorporated in cod in 2008 to capture all data from this form type.

Warp Scarer

A warp scarer is another of the devices which are collectively referred to as seabird scaring devices. The Warp Scarer Details Form is designed to collect information specifically about warp scarers. A warp scarer is a weighted device that is fixed to a warp with clips or hooks. These clips allow the device to slide up and down the warp freely and remain aligned under the warp.

The device main line (either rope or wire) sits underneath the warp and extends to a point very close to where the warp enters the water. Attached to the main line are various coloured materials and possibly streamers which act as a visible deterrent.

The design and size of the warp scarer is critical to its success as a mitigation device. The initial warp scarer form is labelled 'Version 1.5 May – 2007' and tables have been incorporated in cod in 2008 to capture all data from this form type.

Trawl gear

Trawl vessels use a wide range of different trawl net configurations. They may vary the type or number of nets they use and even how those nets are fished on a particular tow. The Trawl Gear Details Form is designed to collect information which will allow researchers to identify changes in trawl gear.

Trawl gear form (Version 1 December 2007) was incorporated into cod in October 2009, with the minimum trip number using this new form being trip 2565 which started in January 2008.

Data on the Trawl gear form is stored in the table *z_trawl_gear, y_trawl_gear, x_trawl_gear.* For the trips the trawl net configurations have been collected, each trawl tow stored in the table *x_trawl_effort* should link on the gear_code attributes, to the information stored in the *x_trawl_gear* table.

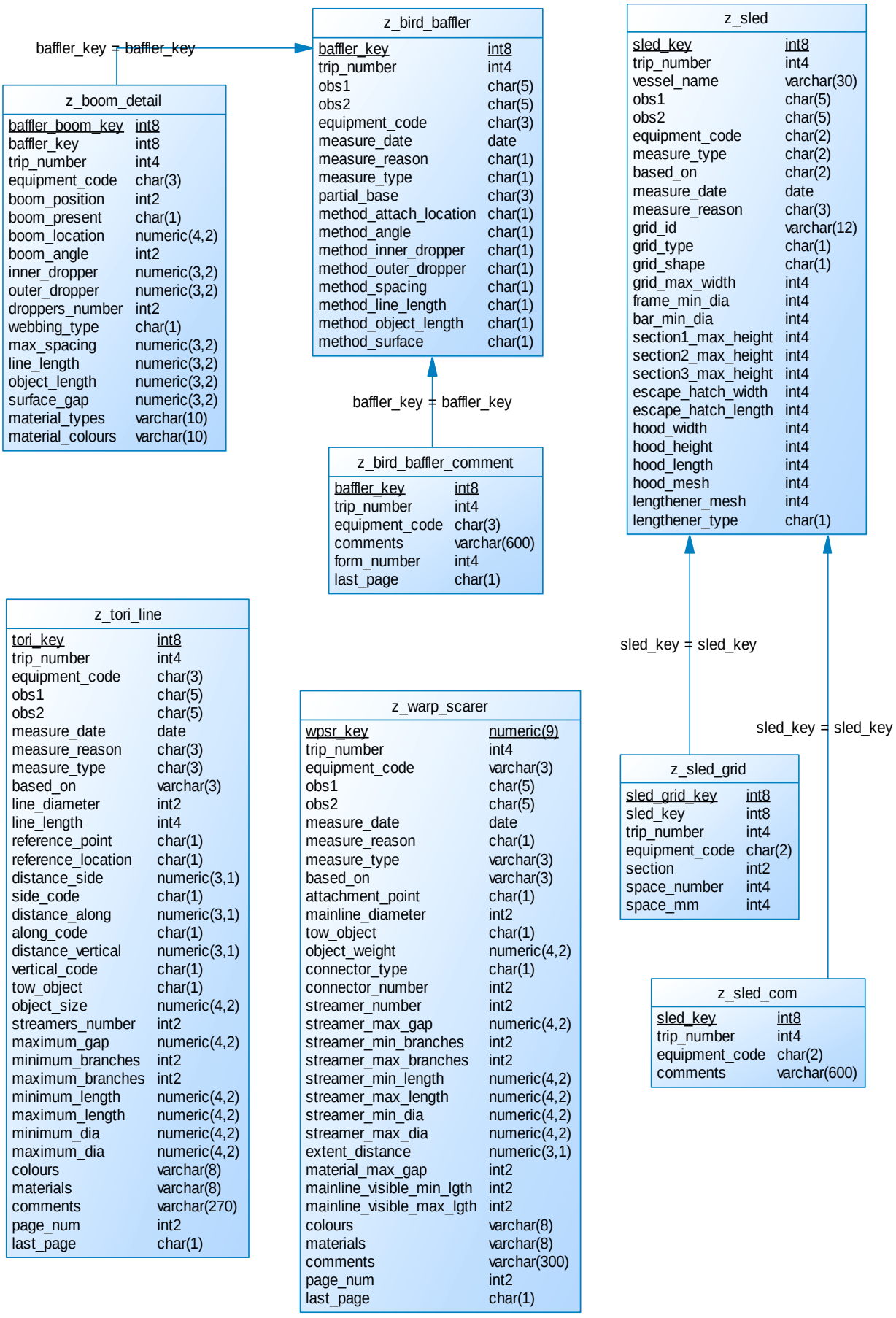

Figure 12: Diagram showing tables for seabird scaring and other mitigation devices data.

3.15 Ageing material samples

Otoliths represent the primary source of ageing material in Marine Research. Other ageing materials; e.g., scales, vertebrae, teeth, spines and statolith are rarely taken. The Observer Programme collects otoliths as part of their catch sampling.

All data about ageing materials and any subsequent reading of these materials to determine the age of a fish are currently stored in the **age** database. The **age** database includes information on otoliths collected from the observer programme and other sources such as research voyages and market (shed) sampling programmes.

Ministry observer otolith inventory data corresponding to the tables t_fish and t_catalog in the **age** database, are incorporated into **cod**, to allow researchers to readily determine location and collection date of the otolith material.

The **age** database can be split into several main areas, each with properties that are important to record:

1. Details about the fish. These details include biological measurements of the fish, e.g., sex, length, etc.
2. Details about the ageing material extracted from the fish.
3. The current location of the ageing material and its status.
4. The readings made on the ageing material to determine the age of the fish. One fish may have many items of ageing material.
5. The agreed age of the fish, based on one or more materials and or reading methods.

The first 3 properties listed above are incorporated into the **cod** database for material collected by the observer programme. Users should refer to the **age** database for readings and ages of fish.

The details and biological measurements of the fish are held in the stage table *y_oto_fish.* (there is also a corresponding report table *x_oto_fish_event*, but this table is not used). The *y_oto_fish* table has a composite primary key of *trip_number*, *sample_number*, *species*, and *fish_no* to identify uniquely each fish. Apart from the key, the sex and length of the fish are the most common data held in this table, although other information such as the weight of the fish and measurements of the otolith can be held also. Up to two types of ageing material can be taken from any one fish, these being recorded by the attributes *material_code1* and *material2_code*. To aid in locating trips the attribute *origin* is included. This stores a 3-character code, which describes the origin of the fish, typically the origin code has the value of 'SOP' in **cod**. The attributes *material_code1* and *material_code2* contain codes which identify which material was taken from the fish for ageing purposes, e.g., otoliths, scales, spines, etc. It is assumed that no more than two types of ageing material are taken from any one fish.

A problem arises in the **age** database because the concept of the sub-sample (listed as *sub_sample_no* in **age**), is not used at all for the Observer Programme data. Because the possibility exists that it may be used, it must remain a part of the primary key for the four main tables. This can result in the presence of null values as part of some primary keys, and by definition a primary key cannot contain null values. Without primary keys, this database implementation can suffer due to the possibility of allowing duplicate records to enter. To overcome this, all null values are replaced with the value of -1 for the attribute *sub_sample_no*. This allows primary keys to be constructed on all the ageing tables.

Current location and status of the ageing material is held in the tables *y_oto_catalog* and *x_oto_catalog*. Again, the table *y_oto_catalog* inherits most of its primary key from *y_oto_fish*, as well as the additional attribute *material_code* to further identify which piece of ageing material from the fish is being cataloged. Only two attributes of *y_oto_catalog* are linked to master code tables, being *origin_code* and *material_code*. Details such as room number, and if necessary location within the room, for example shelf or filing cabinet number can be recorded, as well as the current status, e.g., "being read" or "missing", and the date the status was last updated. These tables also have a one-to-many relationship with *y_oto_fish* and the corresponding *x_oto_fish_event*. Any one fish can produce several (although usually one) type of ageing material and each type can be stored in different locations or have a different status.

This relationship means that any one fish in the database can be linked through the attribute *trip_number* and *station number* or *fishing_event_key* to the effort (station) records held in other tables e.g. *x_event* to determine for example date of capture or latitude and longitude of capture.

There are two other tables in this database that describe the various codes used relating to ageing materials: the codes used in describing the origin of the ageing material are listed in the table z*_origin,* the various materials used for ageing are listed in the table z*_material.* They all have only two attributes - one for the code and another for a brief description of the codes.

Data in the table *y_oto_fish,* which should contain the complete set of otolith inventory data for observer collected otoliths, comes via two routes. Historic data preceeding the establishment of the **cod** database came from the **age** database table t_fish which was loaded to the table *z_oto_fish*. Subsequent otolith inventory data derived from data transcribed from otolith packets by NIWA staff and data enterd by NIWA, is also loaded to the table z_oto_fish.
When otoliths collected by observers are associated with electronic data capture at sea using the 'tablet' to record the data, an electronic otolith inventory can be derived for these otoliths and NIWA does not transcribe the data off the otolith packets. The tables *z_trw_2007_length* and *z_trw_2007_samples* are used to derive otolith inventory data which gets inserted to table *y_oto_fish*, but not the table *z_oto_fish*.

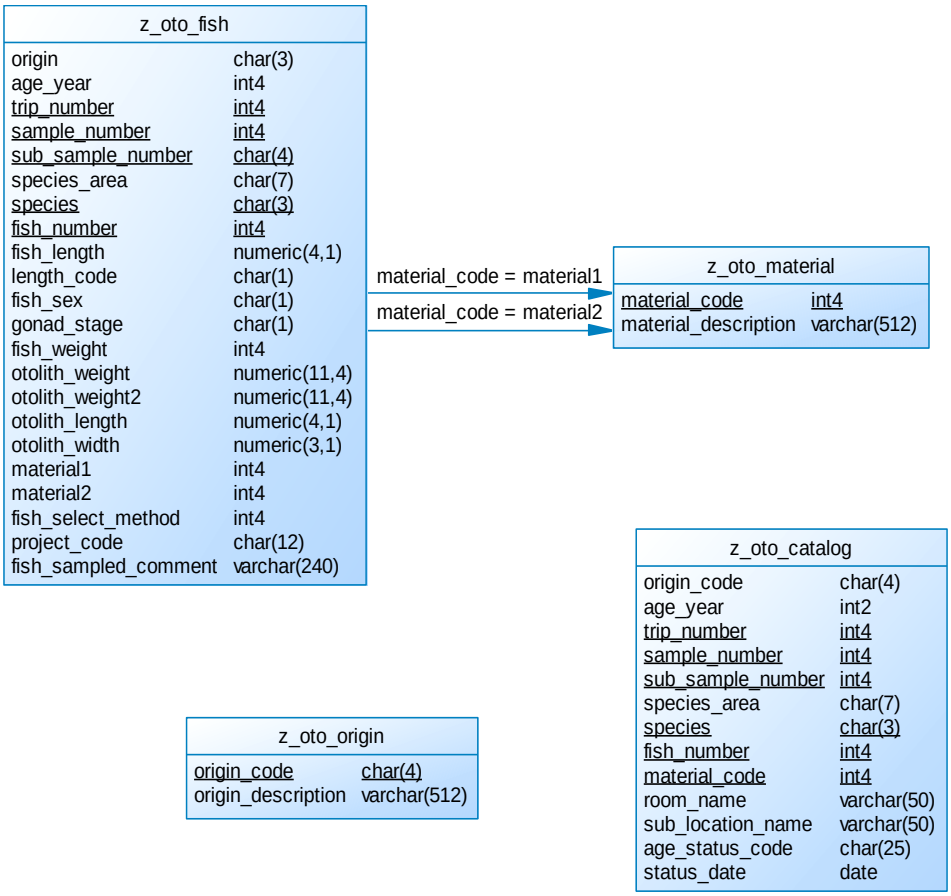

Figure 13: Diagram showing the load tables for the ageing material information.

3.16 Inshore interactions data (NOMAD)

Inshore interactions data is data collected from the inshore fishing fleet, mostly from trawl and set net vessels, but also from bottom long line trips and to a lesser extent from trolling trips and potting trips. Potting events/stations are usually associated with a trip also fishing with one of the other methods referred to above, but not always.

These data were initially referred to as Cetacean monitoring observations because the program was primarily designed to record cetacean (plus bird) sightings/captures and fishing events.
The program was later called 'Monitoring interactions of commercial fishing with protected species.'

These data are recorded at sea on a Nomad hand held computer which incorporates a GPS receiver, so the device can capture the date, time and position, eg at the start of a fishing event, when instructed to by the observer, and generate a corresponding station number if applicable. Other associated data can be selected or entered by the observer, as can the time and position data.

The collection of data using the Nomad started in January 2009, with trip number 2746 being the first in the numeric series for these trips. These trips were initially staffed with a new intake of observers.

The data was exported from the Nomad device but the fishing event number or station number was not initially exported, so this was generated by the data manager (at NIWA) for these trips.
NIWA generated this station number as a row counter when loading these data to the load table, ie z_ctn_fishing, based on the order of the rows in the file as received from MFish.
From trip number 2971 MFish provided the station number as part of the data exported from the Nomad. For trip 2971 the values of station number were all '1' so trip number 2973 is the first trip number with valid station numbers supplied from the Nomad.

These Inshore data are supplied to NIWA electronically, typically in 5 files per trip, 1 file for each of the following data: trip (which contains voyages data), fishing, sighting, status and incident. If there are no incidents recorded there is no incident file and there are only 4 files per trip. There is a corresponding database table for each file at the load and stage levels, eg z_ctn_fishing and y_ctn_fishing.

At the report level, data from the voyages, fishing, sighting and status files are captured in the x_event table, with the event_type_key value coding the respective event type, 31 to 34 respectively. There are associated tables x_sighting and x_status that capture the associated data not captured in the x_event table. These inshore data capture up to 4 sets of date, time and position (latitude and longitude) data for each fishing event as opposed to the usual 2 sets of dates and positions. These are: start of event, start of fishing, end of fishing, and end of event. Data from the fishing file is captured in tables x_event, x_fishing_event, x_event_extra_positions (for the fishing start and fishing end dates times and positions) and the relevant method effort table eg x_trawl_effort for the 1 measure of effort recorded from these Nomad data. The incident data is not loaded to the report tables in cod as these data are better recorded on the nonfish bycatch form and associated tables.

Initially these Inshore trips had no length frequency data collected, but starting from trip 2977 for some elasmobranch species (SCH, SPO and ELE), some biological data has been collected. Subsequently MDBD and or length frequency data collection on Inshore trips has been expanded to many species, including particularly SNA from method BLL from trip 3902.

In 2016 some additional fields were added to the Nomad fishing file. A target species column was added, first collected on trip number 4791 which started in August. For bottom lining methods, initially for trip number 4846 eight additional columns were added including bottom depths and hooks observed. For some earlier Nomad datasets target species was updated using the value recorded in commercial data.

For Set net or Bottom longline fishing trips recorded on the Nomad, there may also be equivalent data recorded on paper forms. These data get merged in the report tables, where typically Nomad data is loaded first and additional data collected on paper forms is used to update columns in report tables.

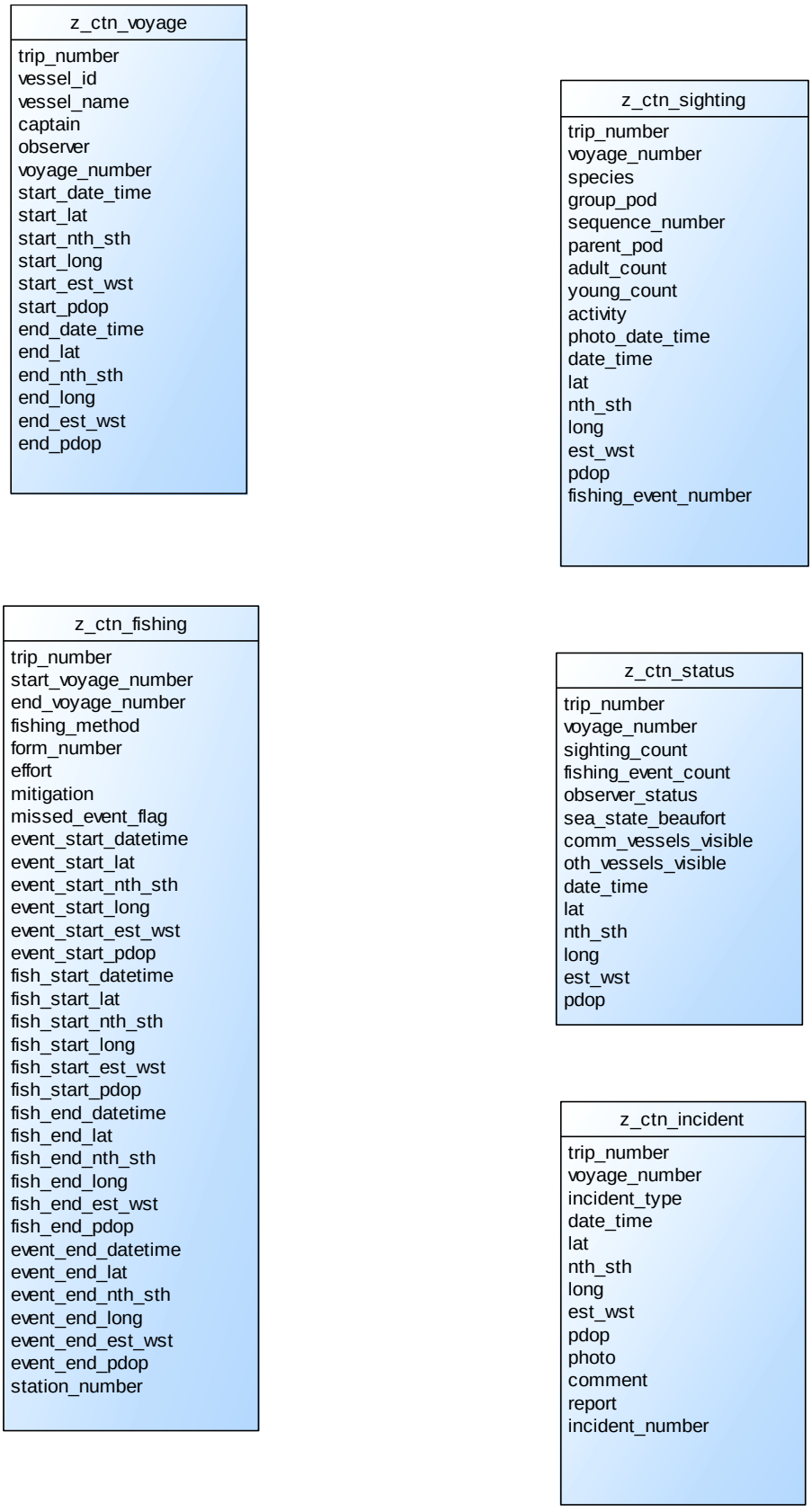

Figure 14: Diagram showing the load tables for the Inshore interactions data (formerly cetacean monitoring data).

3.17 Setnet data

The Observer Programme coverage of set net fishing trips using version 1 of the current forms commenced in January 2008.

Setnet data from the Conservation Services Programme (CSP), run by the Department of Conservation, as provided from the Ministry of Fisheries, was loaded into COD during 2009. This CSP data was provided as 3 excel spreadsheets, for the time periods 1999-2000, 2001 and 2005-2007. Detailed catch information was not recorded, only target species and primary catch species. The 1999-2000 trips did not have Ministry of Fisheries observers onboard, hence did not have observer trip numbers assigned, these trips have been assigned the trip numbers 32015 to 32032.

Version 2 of the set net forms was introduced about November 2013, with the first trip using these version 2 forms being trip number 3932, which also recorded some sets on version 1 forms. Changes between versions 1 and 2 included the addition of the fields Vessel C/E Return number, and Beaufort number for setting and hauling on the Catch/Effort form. Net length was dropped from the Catch/Effort form in version 2 and added to the Setnet Gear form. For this reason net length is recorded in 2 places particularly in the load tables, i.e., in z_setnet_nets_set and z_setnet_gear, depending on if trips were pre or post trip 3932.

The observers fill in two forms for set net data, an "Observer Setnet Gear Form" and an "Observer Setnet Catch/Effort Form". Data from the forms are stored in the load tables *z_observer_trip_master, z_setnet_gear, z_setnet_station, z_setnet_nets_set, z_setnet_catch* and the corresponding stage database tables.

In the report tables, there are three specialised tables relating directly the setnet data *x_setnet_effort, x_setnet_gear, x_setnet_nets_set*.

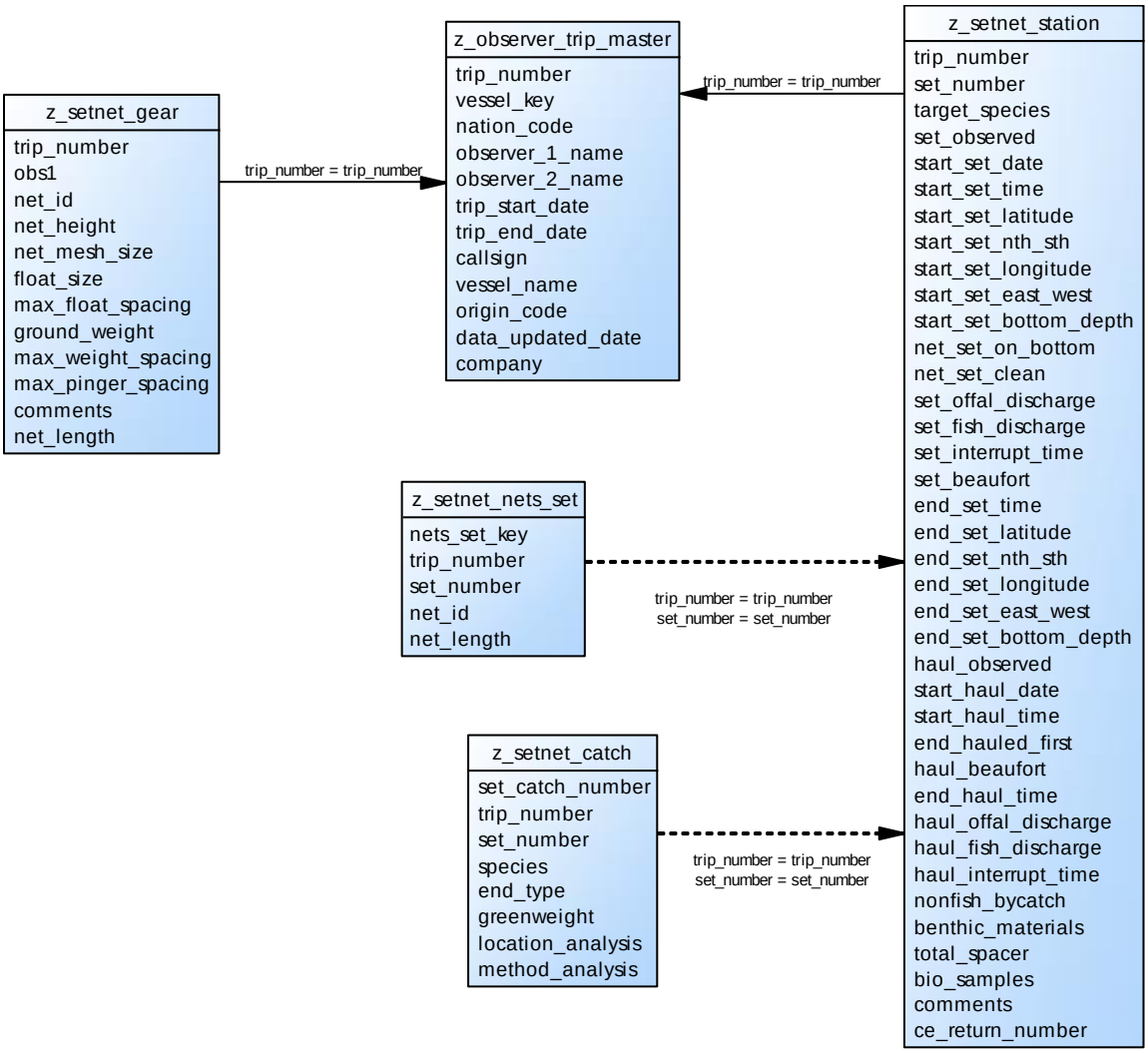

Figure 15: Diagram showing the load tables for the setnet data and their relationships

3.18 Observer Benthic Materials

The Observer Benthic Material Form data set begins from trip 2564, January 2008, (Form version 1 - December 2007). Prior to trip 2564, the benthic materials were recorded as part of the greenweight catch. The current paper form version is "Version 2 – July 2008". Benthic data can be received electronically with the "At Sea Observer" data, in the Excel "MPI Worksheet" or by paper form.

The information recorded on the Observer Benthic Material Form is stored in the **cod** table *z_benthic*. Benthic materials collected by the observer programme are sent to NIWA for identification and are recorded with the 'End Type' field on the Benthic Material Form as 'RET' (all retained by observer) or 'RDI' (sample retained and remainder discarded). Unretained samples are recorded with the End Type 'DIS' (Discarded all), or 'PRO' (all processed by vessel).

In 2023, a new column "fnz_image_filename" was added to store the image filename(s) when photos are taken of benthic materials and to facilitate the matching of species identified by an image to the benthic table record (refer to figure 16a).

The Process:

- Benthic sample information as recorded by the observer is registered into the Observer Sample Database (OSD) by the NIWA Collections Curation Team.
- Data from the OSD is then loaded to the NIWA Collections Curation team's "Specify/niwainvert" database.
- Taxonomists identify the physical benthic species and determine the true species ID. The species is updated in the "Specify/niwainvert" database.
- Annually, the NIWA Collections Curation team provides a list of expert identified benthic species to the Fisheries Data Services team who match them to the COD Benthic tables, using various parameters such as tow number, observer species ID and then update the records with the true species and other "expert" fields.

The *y_benthic* table therefore holds both a **species_obs** (species recorded by the observer) and a **species_true** (species ID as identified by a taxonomist) species code, for all identified samples. Additional rows are created when a sample contains multiple species, or could not be matched to the **species_obs**. At the report table level, the data from the Benthic Material Form is stored as catch in the general catch table *x_fishing_event_catch*. The **species** code column in the *x_fishing_event_catch* table gets updated with the true expert identified species ID, (and new rows created where needed, in the same way as for y_benthic).

The previous process undertaken up until approximately the year 2015 can be described as follows: Data from the Observer Sample Database (OSD) was periodically loaded into the COD table *z_benthic_samples.* The OSD data generally needed further grooming to enable linking back to the observer benthic materials (data in z_benthic). After the grooming was done, the updated benthic sample data was stored in the table *y_benthic_samples*.
Data from the benthic samples table and the Observer Benthic Materials Form (z_benthic) was reconciled and the combined data stored in the *y_benthic* table and *x_fishing_event_catch* table. (The z_benthic_samples table was used until approximately year 2015 (trip 4314) and y_benthic_samples table was used until year 2011 (trip 3339). Refer to figure16 & 17. There was a separate load table to store the CCAMLR benthic sample data, due to differences in the data sets recorded; *z_benthic_ccamlr_samples*. Most recent trip number is 2996 (year 2010).

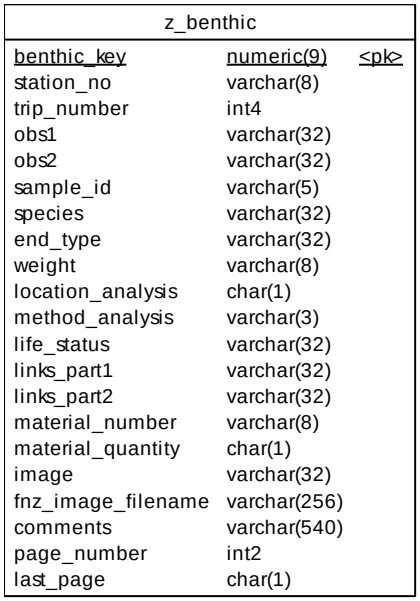

Figure 16: Diagram showing the Load tables for the Benthic data.

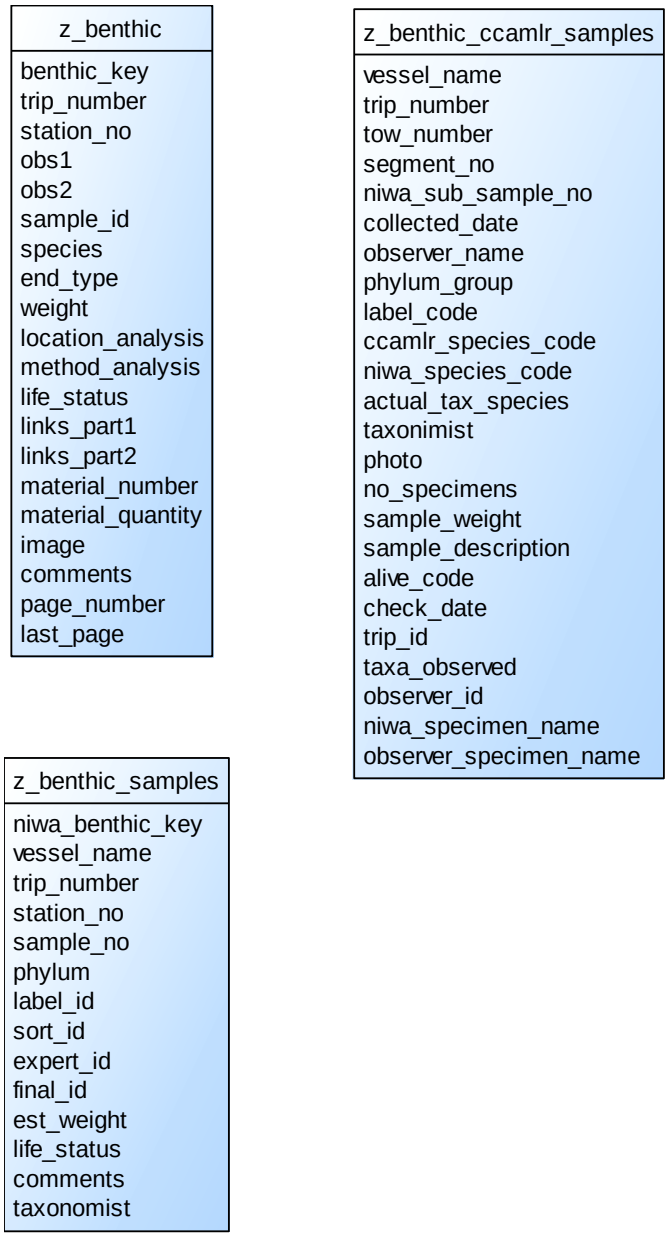

Figure 17: Diagram showing the load tables for benthic data until 2015.

3.19 System tables

The system tables contain general information about a return for a trip (e.g. ODEAS Trawl, Conversion Factor, Surface LongLine). The *z_sys_data_return* table contains information such as when the return was received and when it was loaded. It is used to control processing the data through the Load schema to the Stage schema to the Reporting schema.

The species tables contains the list of valid species.

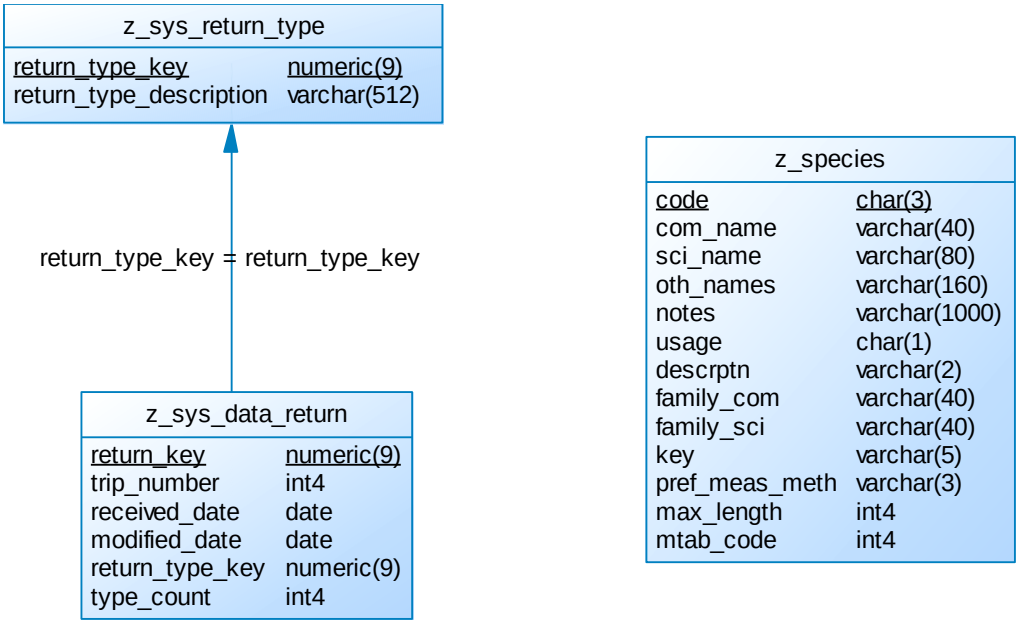

Figure 18: Diagram showing system tables and the species reference table in the load schema.

3.20 Vulnerable Marine Ecosystem Evidence Process

The "Vulnerable Marine Ecosystem Evidence Process" form was introduced in 2019. The purpose of the form is to meet international requirements with regards to capture of vulnerable marine organisms. This form must be filled out for all tows that are fished in the ET.

The form records the tow details, noting that this is slightly different from the tow details as recorded in the Observer Catch Effort Log Book. The datetimes and position are always when the net reaches and leaves the target depth, even if for some reason the gear had already ceased fishing at target depth or had continued to catch fish after this time.

The form records any catch of the specific taxonomic groups which are printed on the form. If the weight for a species exceeds the particular weight limits and/or threshold limits as indicated on the form, then this is indicated by a tick in the appropriate checkbox. If the observer has entered a particular number of ticks (as indicated on the form) then the event is considered an encounter and the encounter protocol must be applied.

The *z_vme_station* table stores the details of the tow as per the definition above. The *z_vme_catch* table stores the details of the catch. The *x_vme_limit* table stores the limits for each relevant taxonomic group and form version.

At the stage level, the VME data is loaded into the *y_vme_station* and *y_vme_catch* tables.

At the report level, the tow details are loaded into the *x_event* table, with an event type of 'Tow details as per VME Evidence process'. Other information relating to the tow is loaded into the *x_vme_details* table.

Since all vulnerable marine organisms are benthic organisms, all VME catch details are also loaded into *z_benthic* where they have not originated on a Benthic form. From there, all benthic catch including VME catch is loaded into the *y_benthic* table, and subsequently into the *x_fishing_event_catch* table.

Refer to figures 35 and 36 to see the relationships between the VME and Benthic tables.

Example queries for VME Catch are shown below:

Find all VME station and catch details for a trip

```
select y.trip_number , y.tow_number , e.event_start_date, e.start_latitude,
       e.start_longitude , x.species , x.greenweight ,
       y.threshold_limit_exceeded , y.weight_limit_exceeded
from   x_event e,
       x_vme_details d,
       y_vme_catch y,
       x_fishing_event_catch x
where  d.trip_number  = :trip
and    d.event_key    = e.event_key
and    d.event_key    = y.event_key
and    y.vme_catch_key  = x.fishing_event_catch_key
order by d.event_key  ;
```

Find all VME catch for a trip

```
select y.trip_number, y.tow_number, x.species, x.greenweight,
       y.threshold_limit_exceeded, y.weight_limit_exceeded
from   y_vme_catch y,
       x_fishing_event_catch x
where y.vme_catch_key = x.fishing_event_catch_key
and   y.trip_number   =  :trip ;
```

Note: Do not attempt to join the event_key on the VME tables (*y_vme_station, y_vme_catch, x_event* or *x_vme_details*) to the fishing_event_key on the *x_fishing_event_catch* table. The fishing_event_key on the *x_fishing_event_catch* table is the key for the fishing event as defined in the Catch Effort, whereas the event_key on the VME tables is pertaining to the VME tow details, which are defined differently (that is, when the net reached and left the target depth).

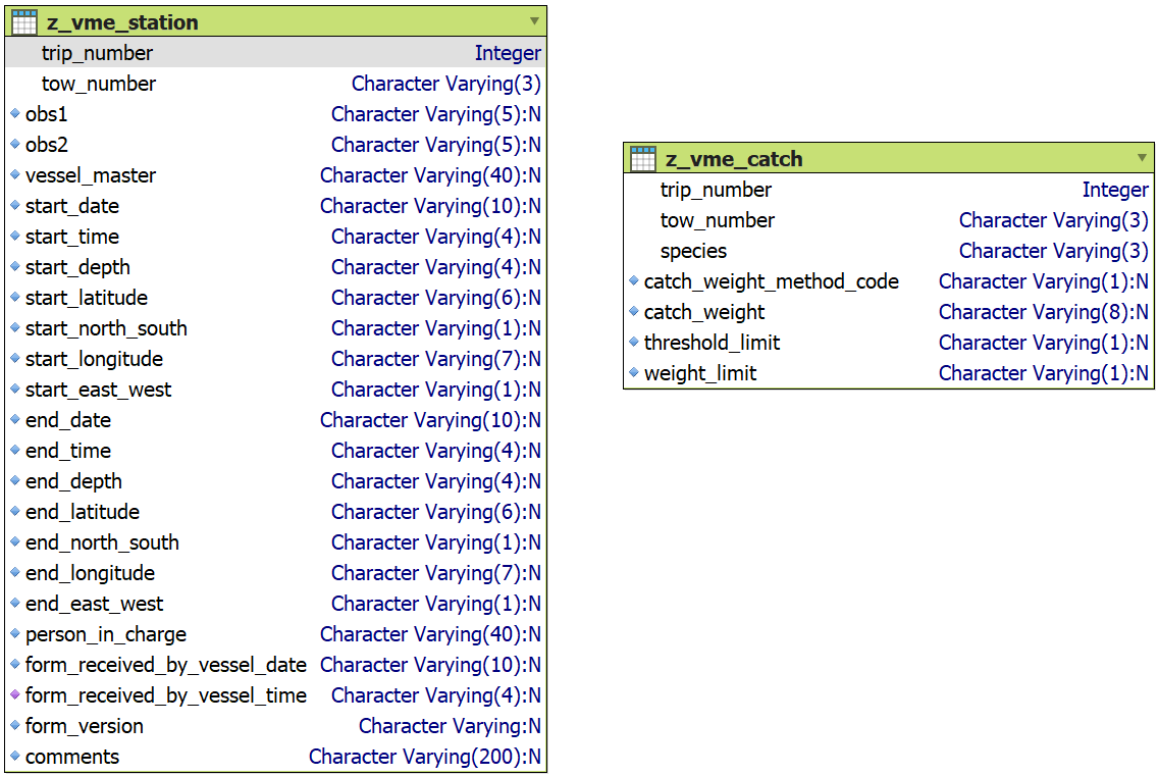

Figure 19: Diagram showing the Load tables for the Vulnerable Marine Ecosystem Evidence Process data.

3.21 Stage tables

The table design for the staging tables is similar to that for the load tables, but with the addition of system generated keys, including a key that typically either forms the primary key for the table or is a unique index on the table. Lookup keys are also added at this stage level. A lookup key is typically named the same as the attribute with '_lookup_key' added to the name, e.g. in the table y_trw_new_observer_station, the attribute beaufort_scale, has an associated lookup key of beaufort_scale_lookup_key. The various lookup keys e.g. beaufort_scale_lookup_key can be joined to the table x_lookup_code on the attribute lookup_code_key, with the lookup_code_code containing the value e.g. of the beaufort_scale, and the lookup_code_description in this table contains the description of the meaning of the code.

The trawl station data in the stage tables is currently processed via the *y_trw_new_observer_station* table. The presence of multiple station tables for trawl data in the stage schema prevents enforcing foreign keys for child tables of station data, such as *y_lfs_general_catch_sample*. Currently relationships that are not enforced by foreign keys in the database, particularly between the stage tables, are shown in the ERD's as dotted lines.

Entity Relationship diagrams showing the staging schema in separate diagrams are included below in the following pages. Note that *y_lfs_trawl* contains historic trawl data only.

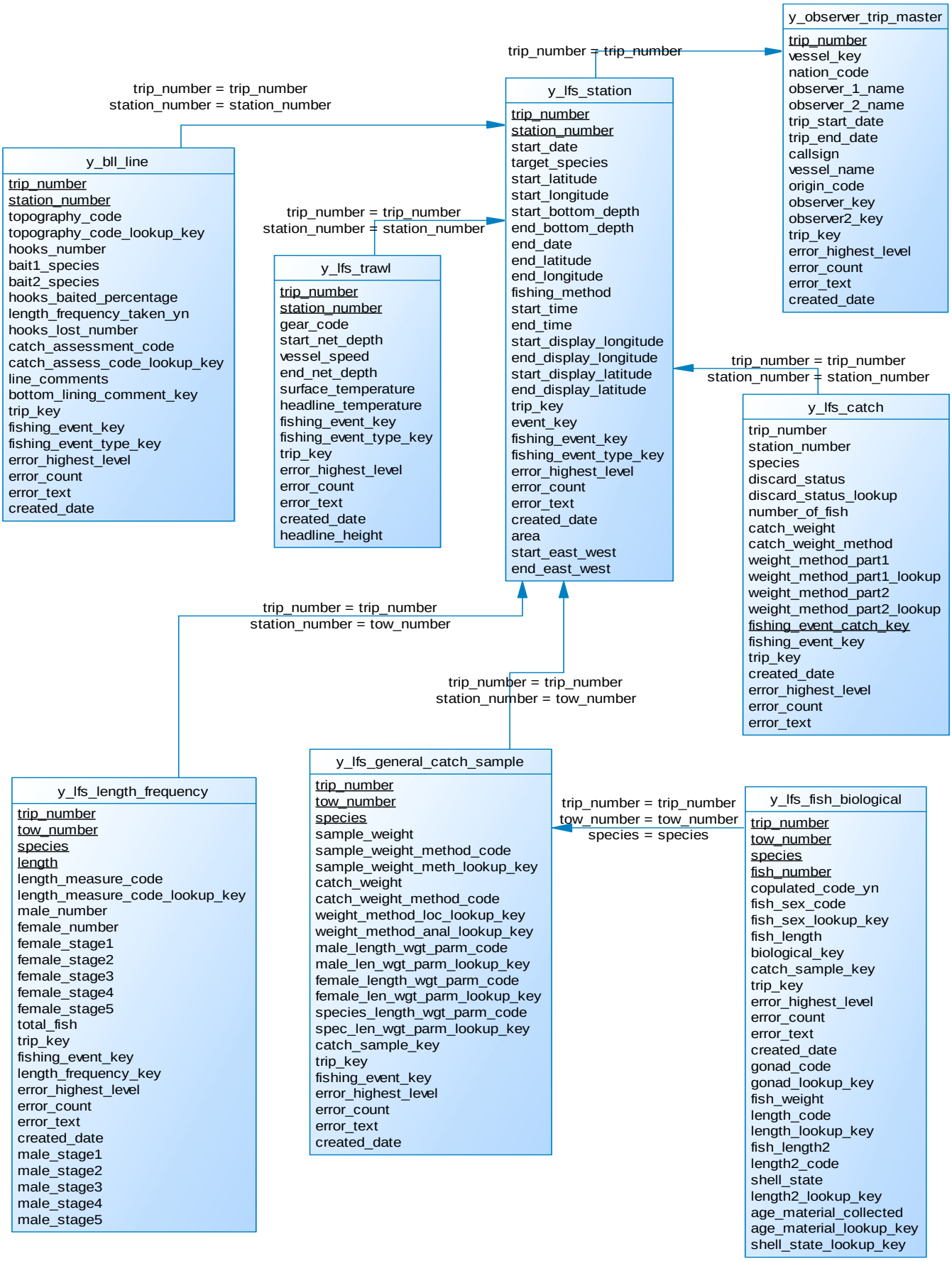

Figure 20: ERD for the tables originating from the obs_lfs database

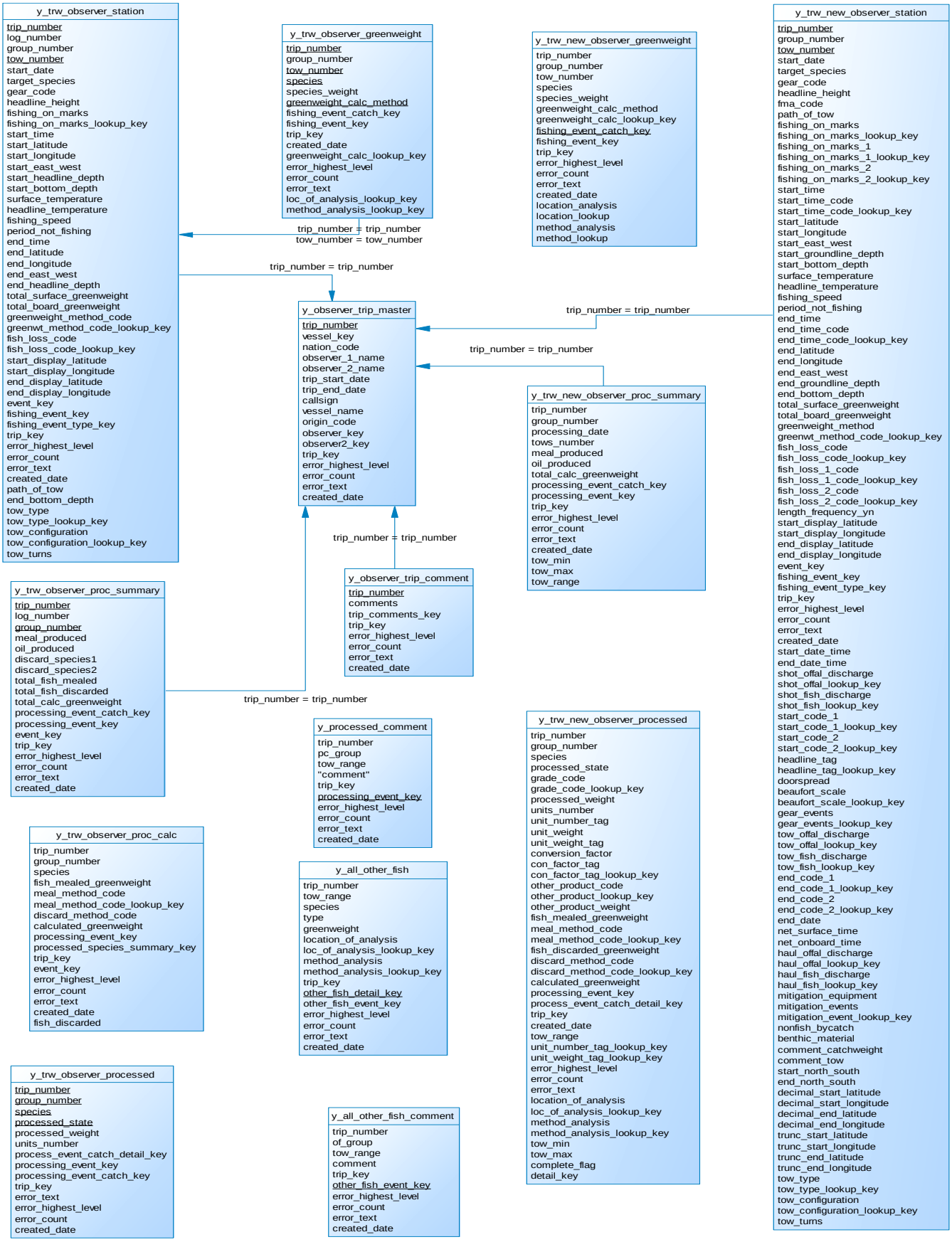

Figure 21: ERD showing tables originating from the obs database in the stage schema.

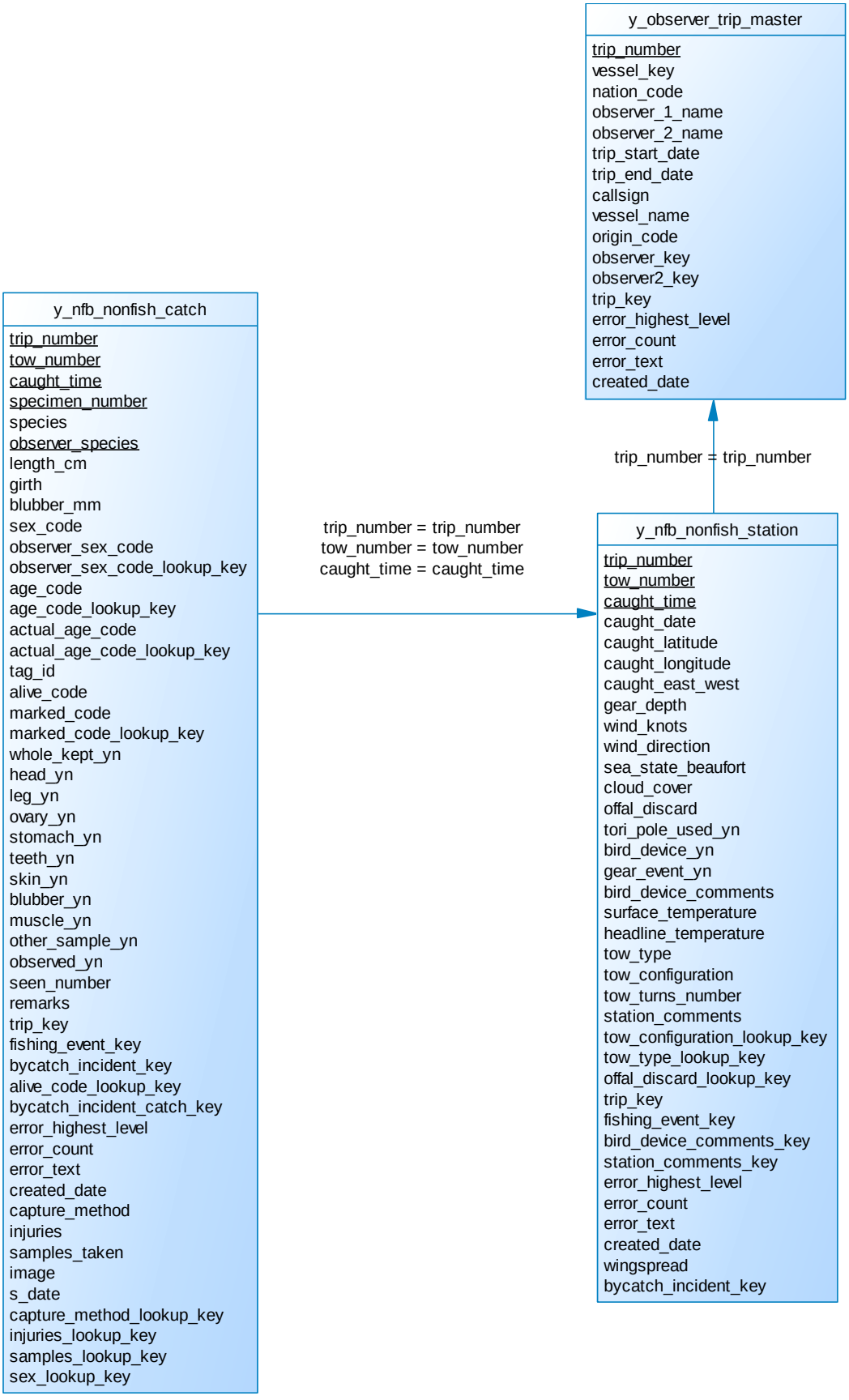

Figure 22: ERD showing the non-fish bycatch tables in the stage schema

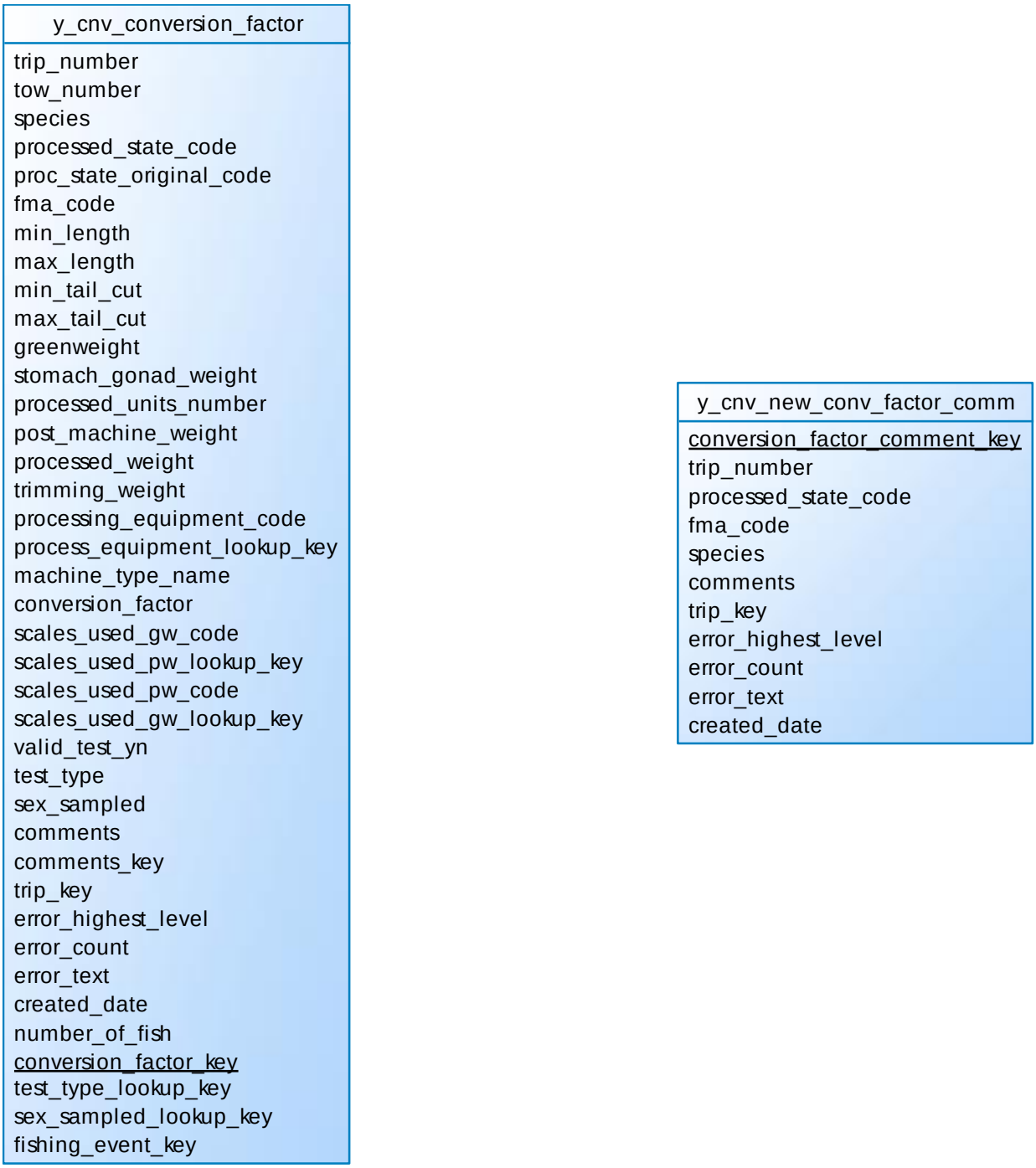

Figure 23: Diagram showing the conversion factor tables in the stage schema

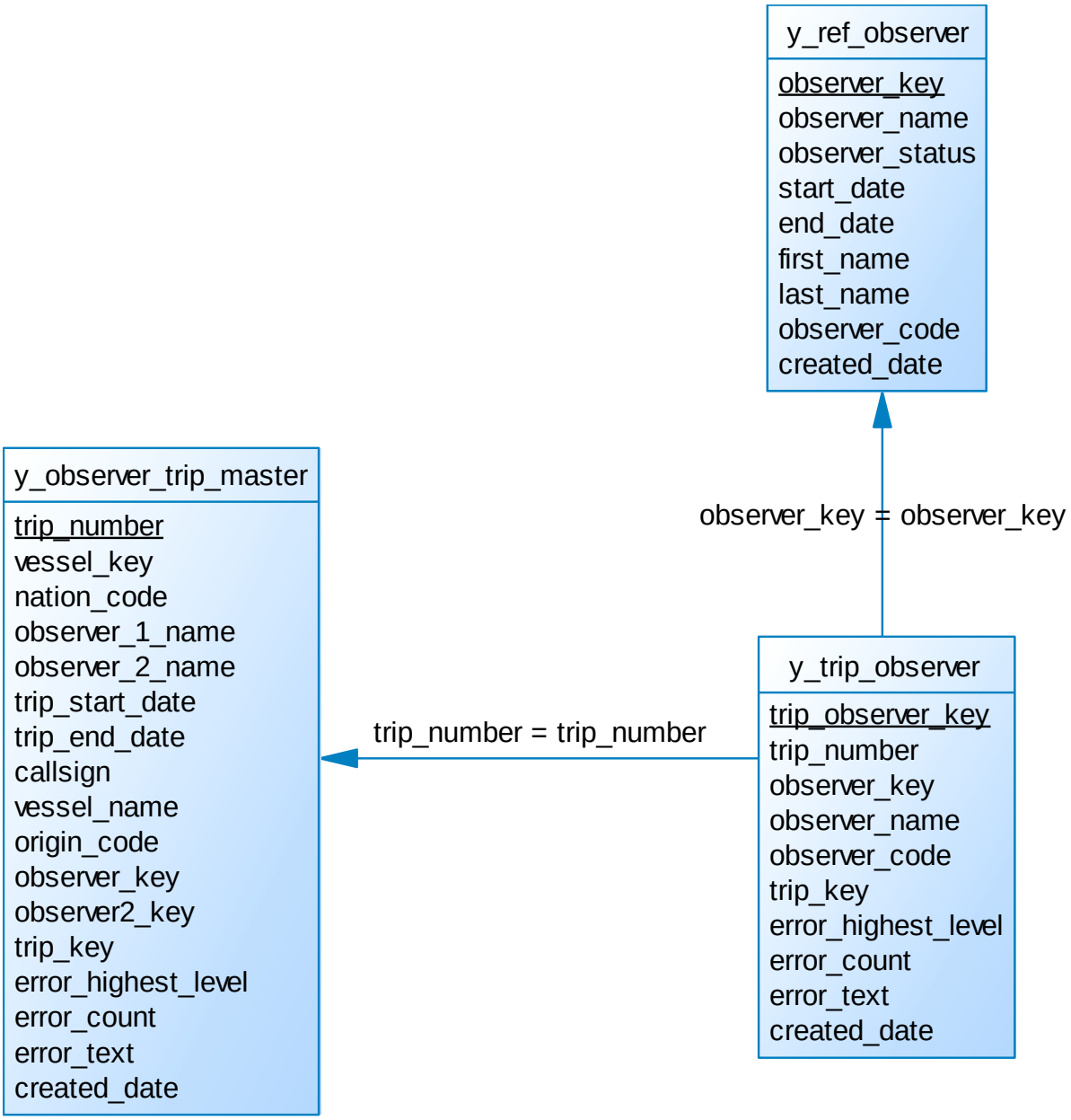

Figure 24: ERD showing the trip and observer tables in the stage schema

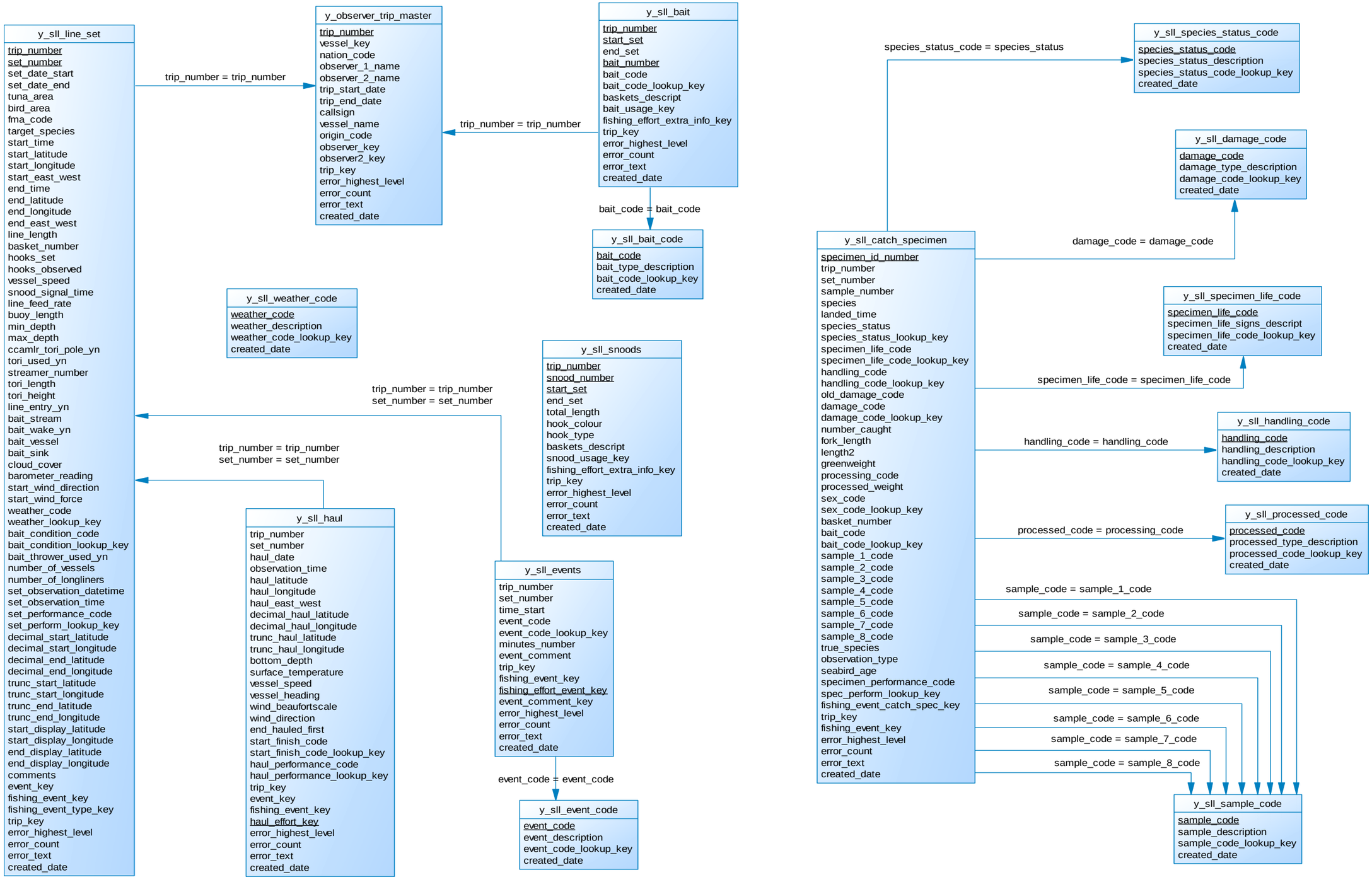

Figure 25: ERD showing the Surface Long Line tables in the stage schema

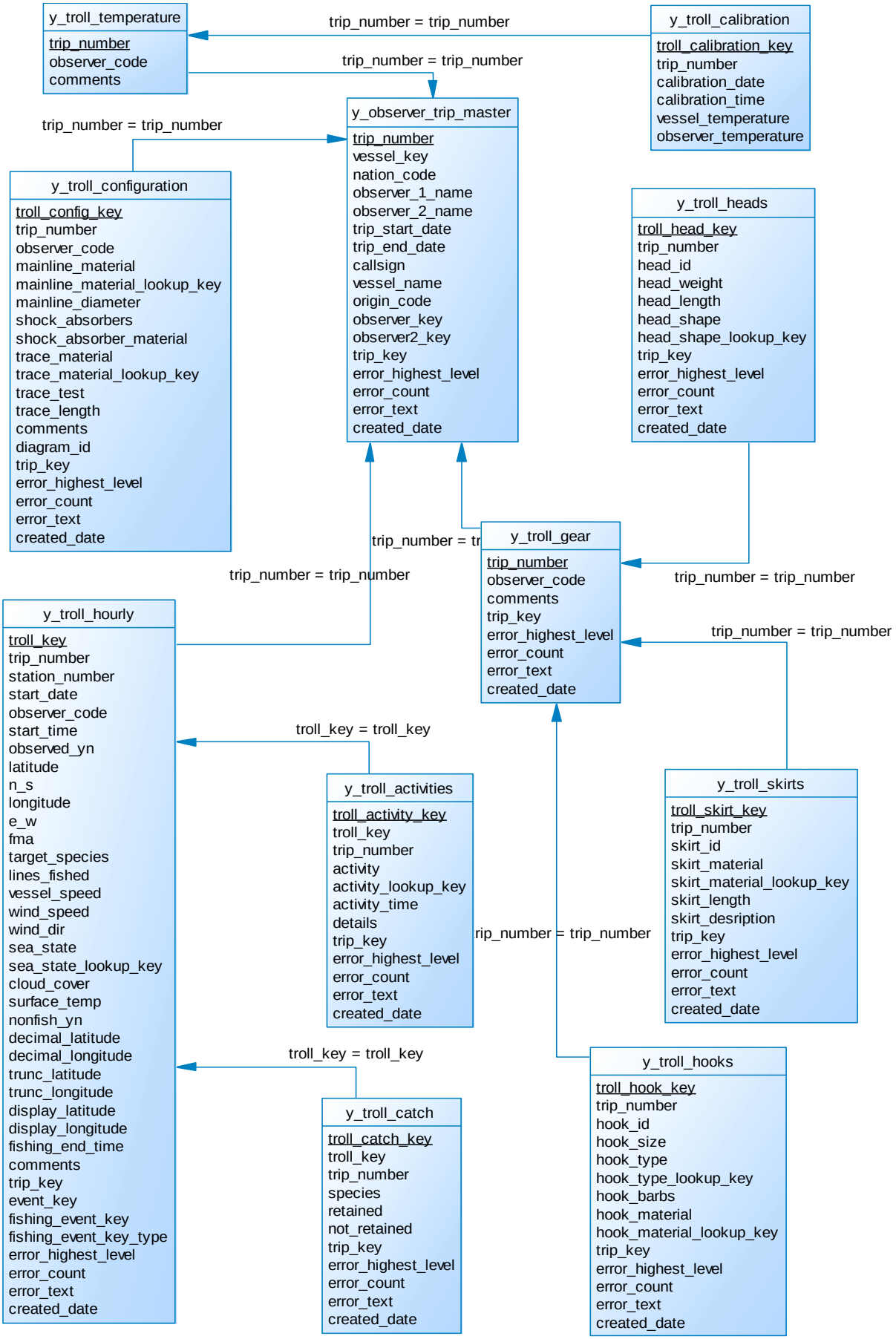

Figure 26: ERD showing the troll tables in the stage schema

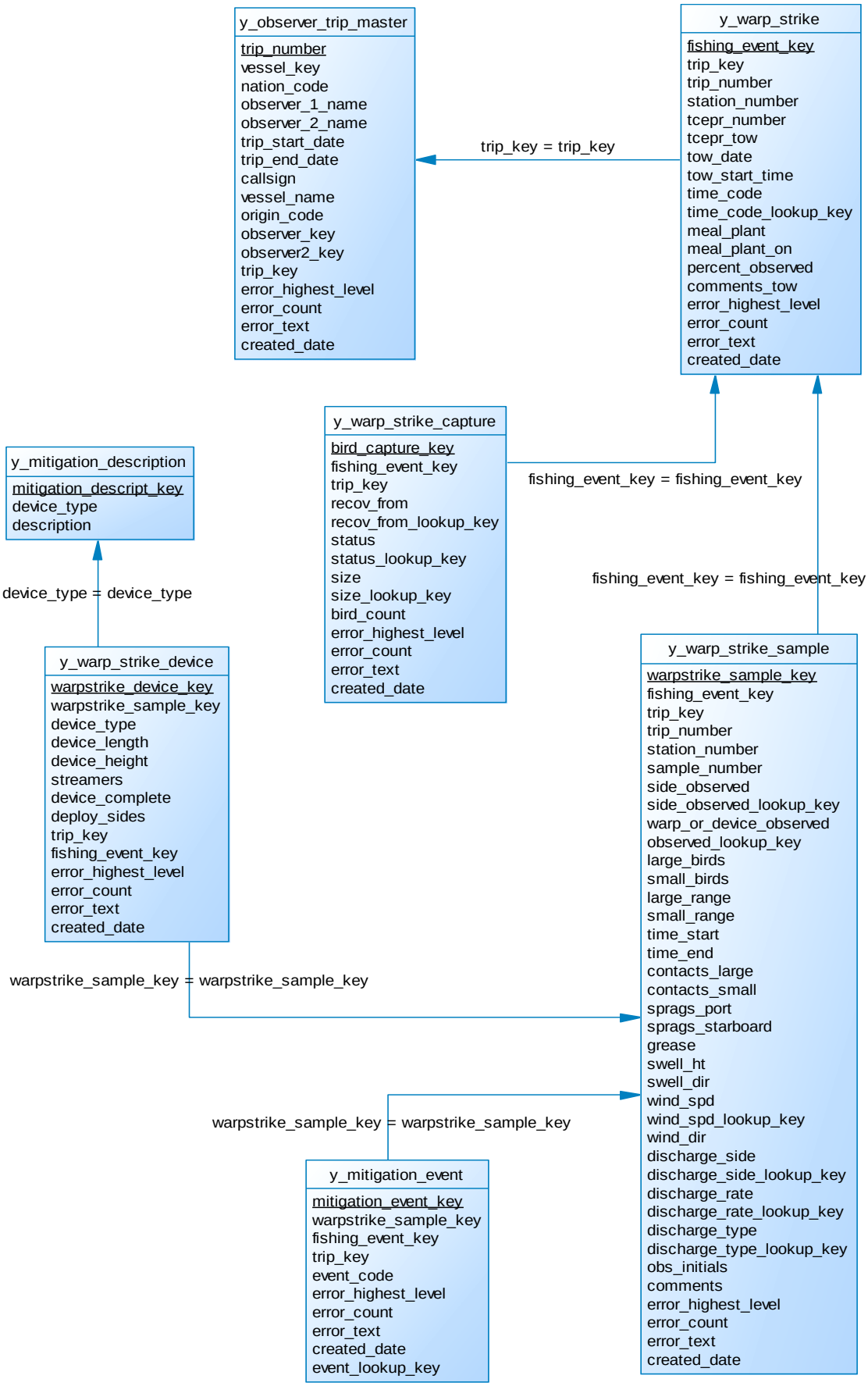

Figure 27: ERD showing the warp strike tables in the stage schema

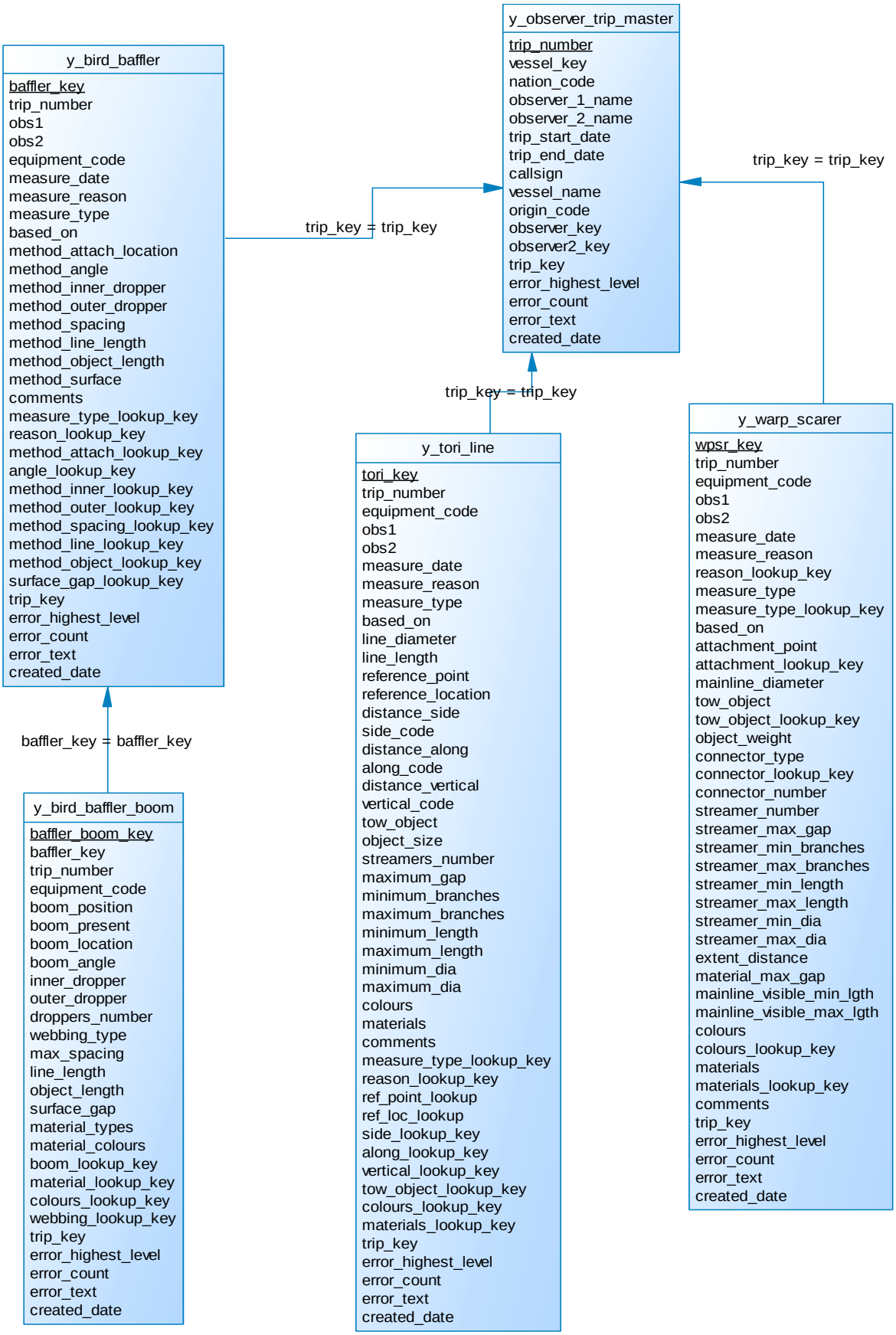

Figure 28: ERD showing bird scarer tables in the stage schema

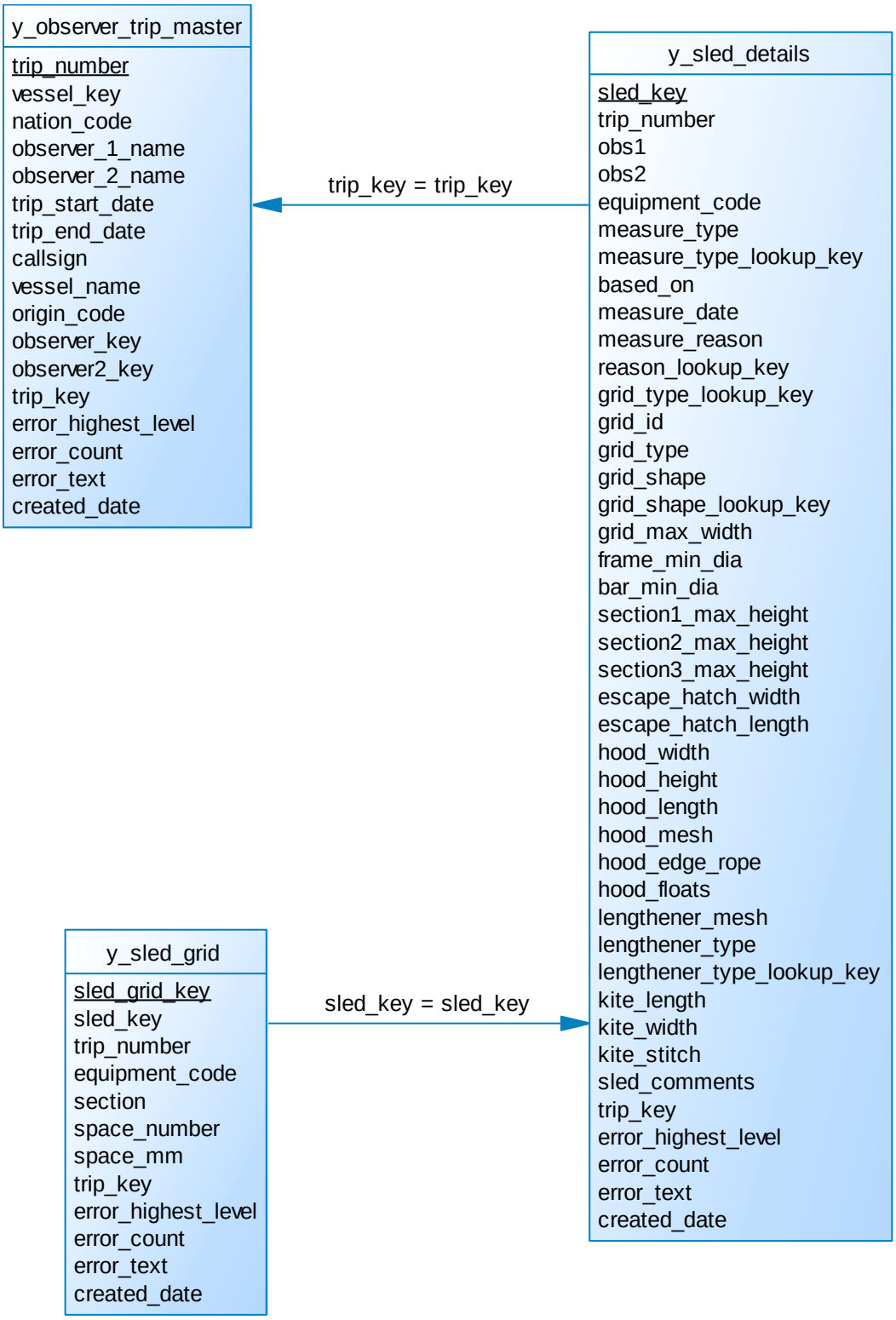

Figure 29: ERD showing the SLED tables in the stage schema

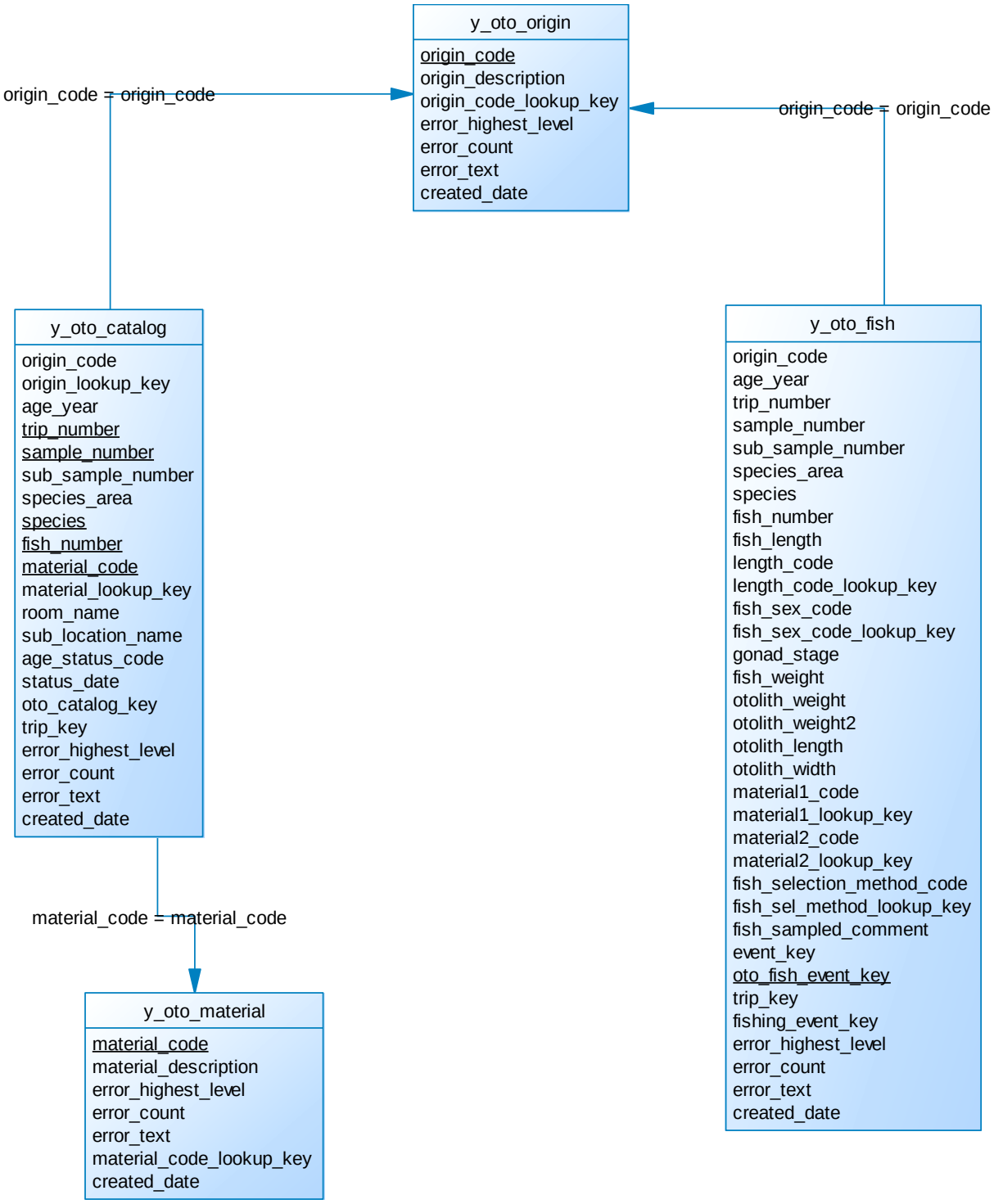

Figure 30: ERD showing the ageing material tables in the stage schema

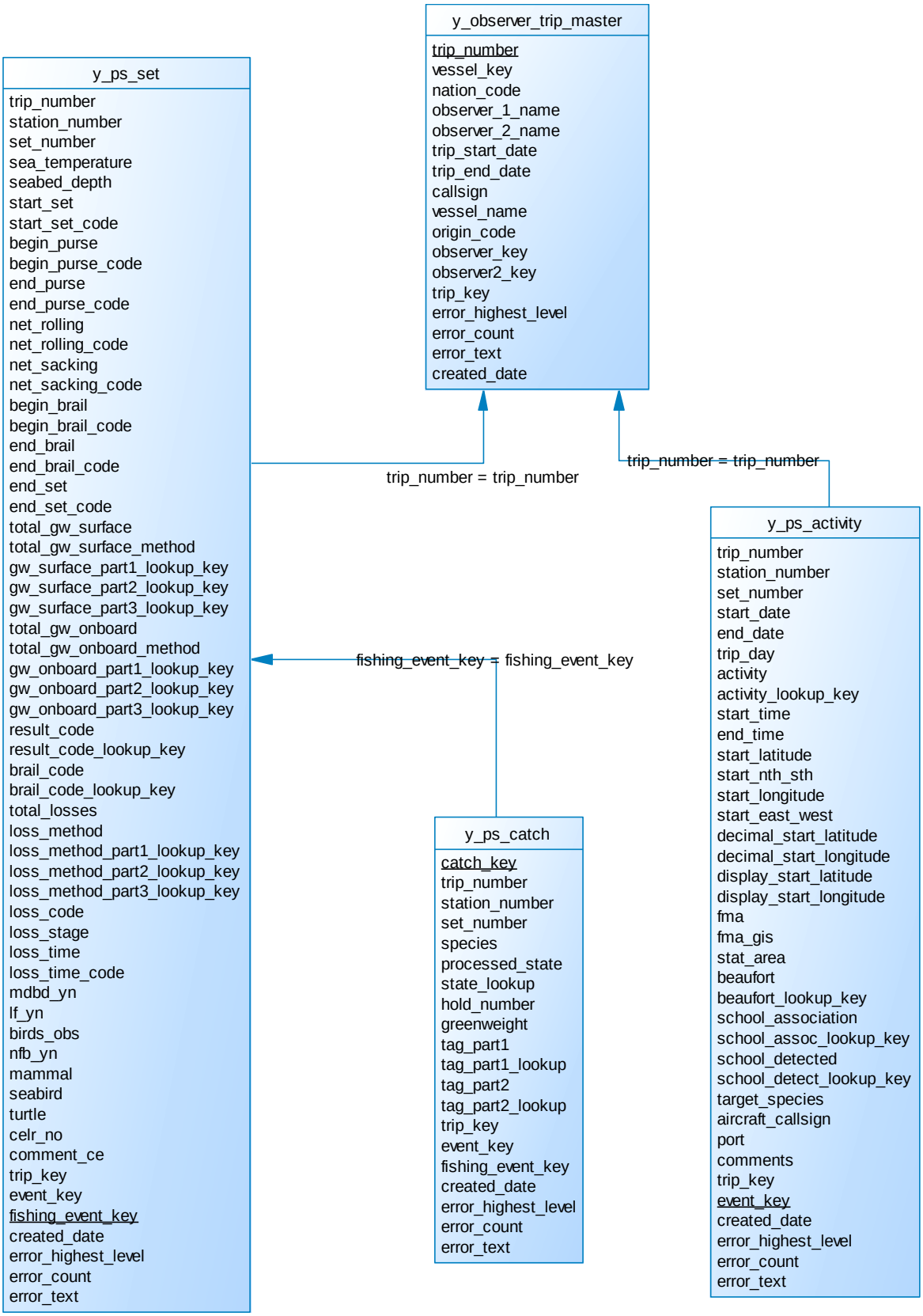

Figure 31: ERD showing the purse seine tables in the stage schema

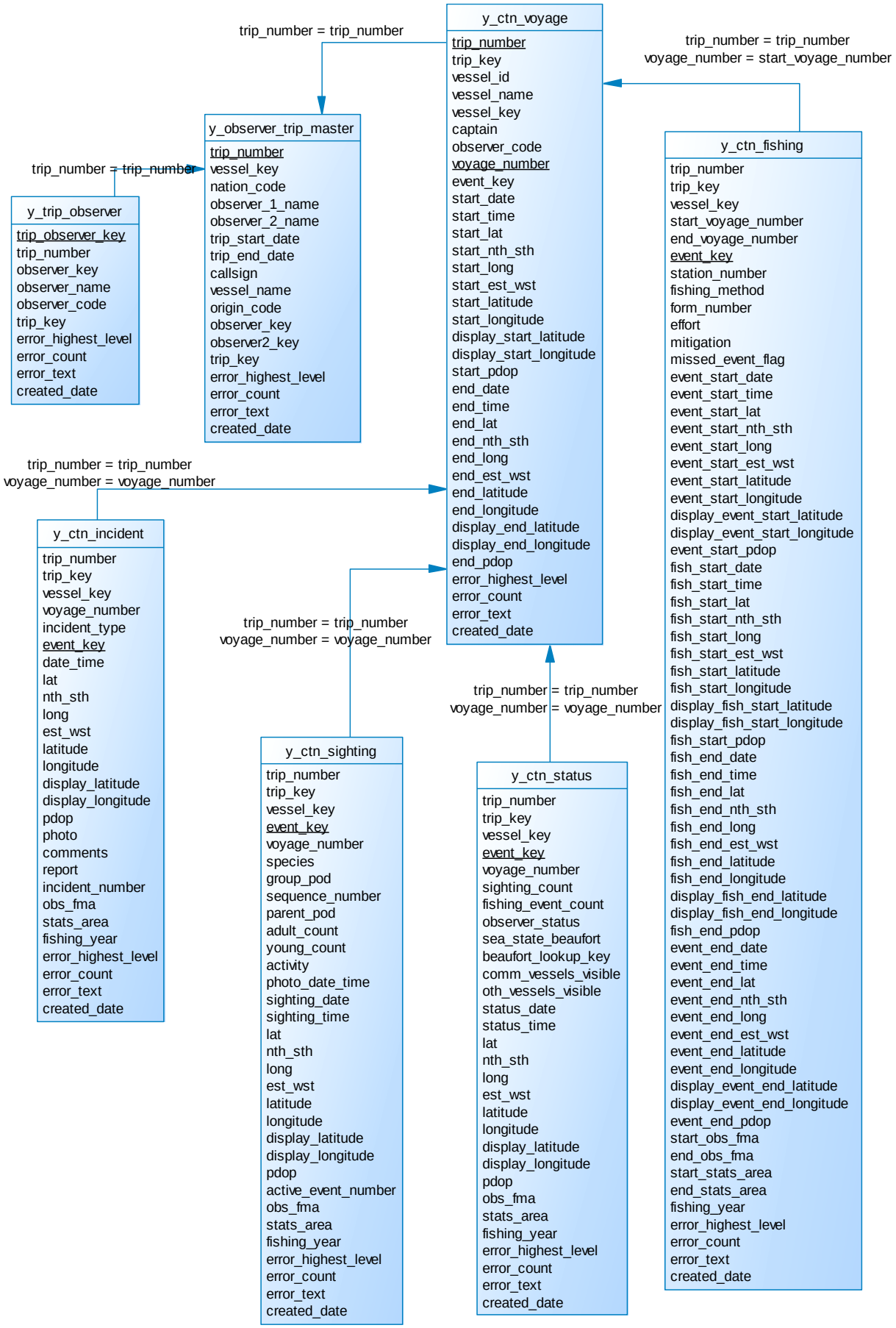

Figure 32: ERD showing the Inshore tables in the stage schema

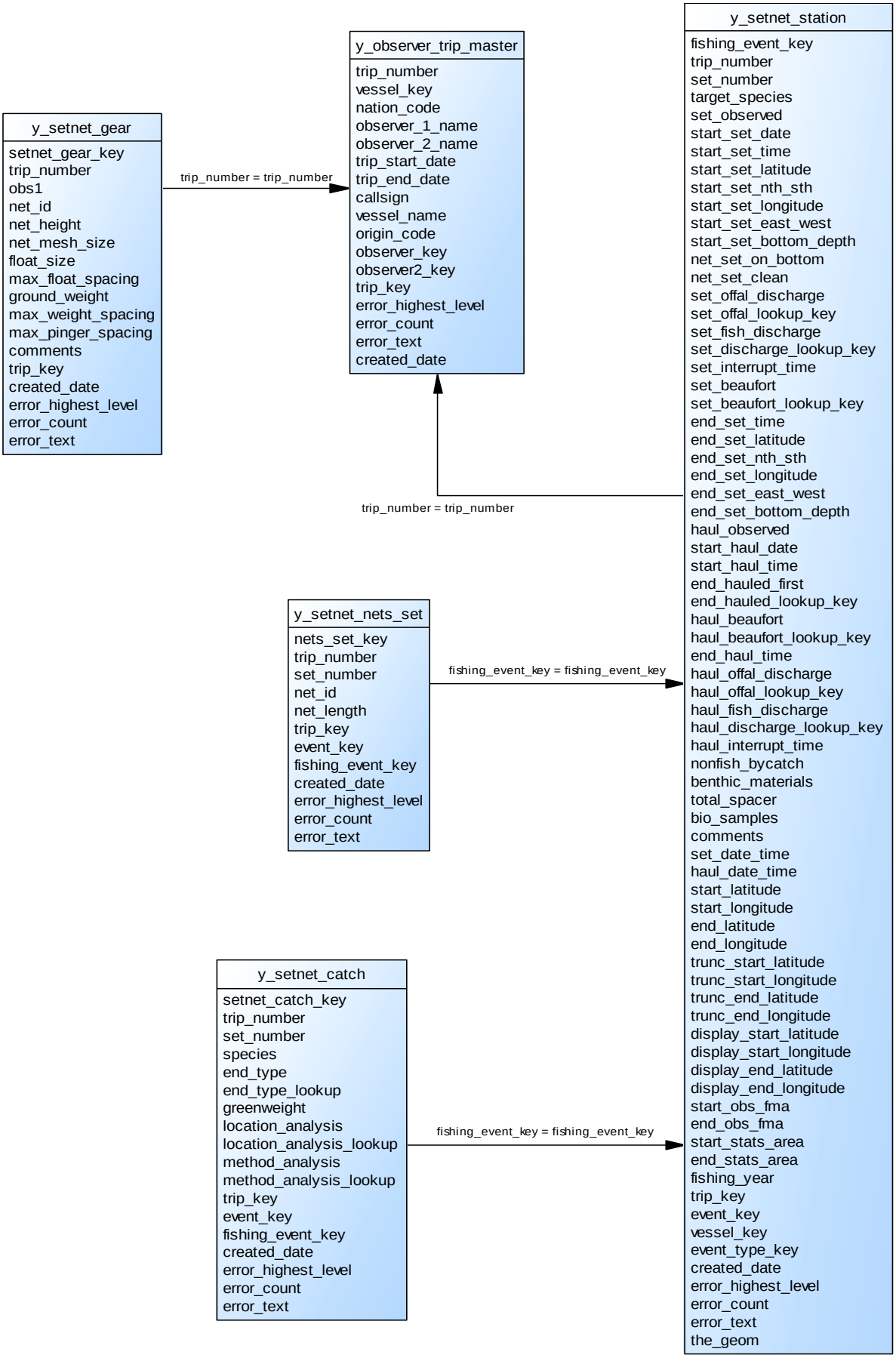

Figure 33: ERD showing the setnet tables in the stage schema, for Version 1 of the forms.

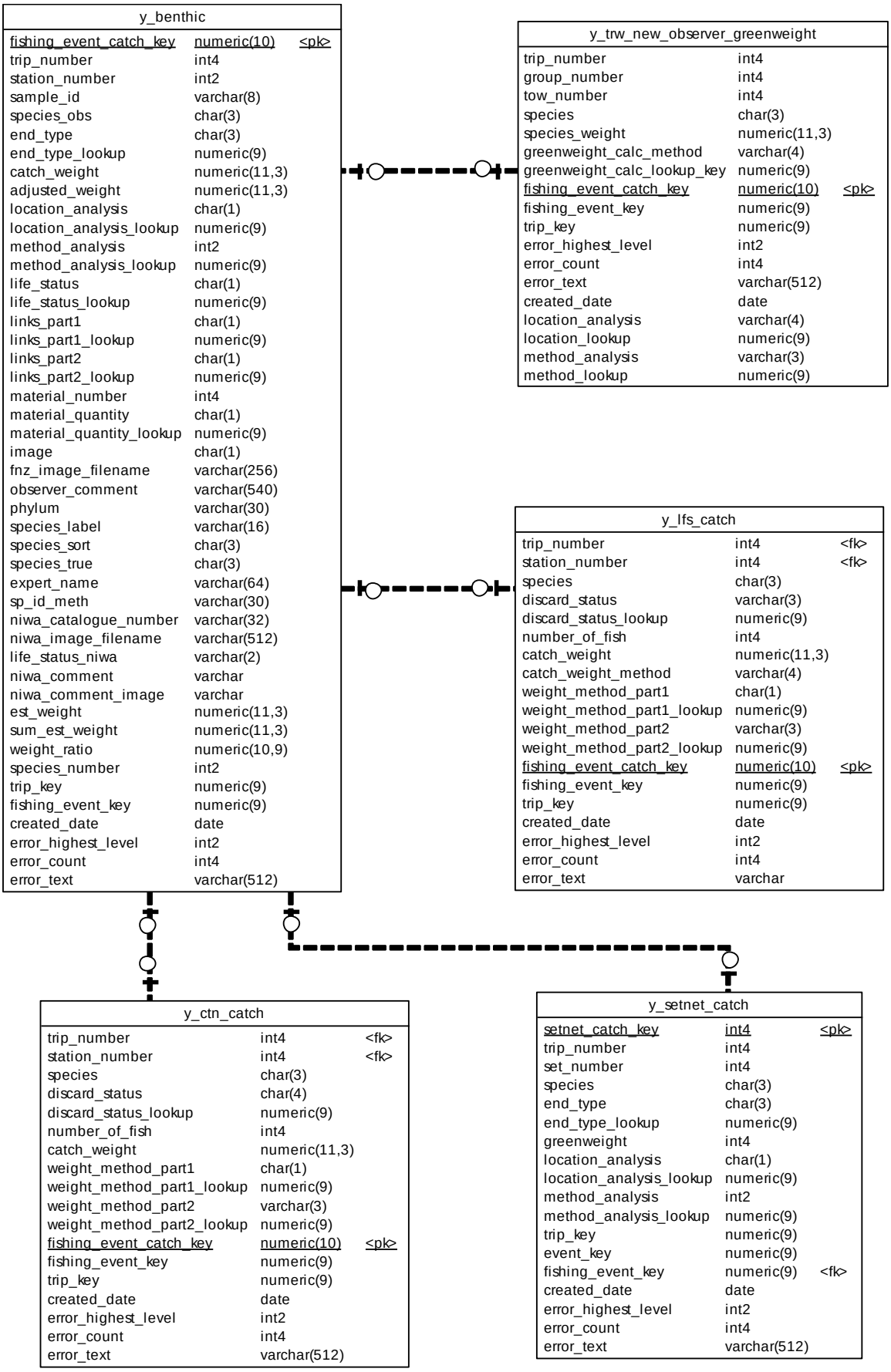

Figure 34: ERD showing the benthic tables in the stage schema

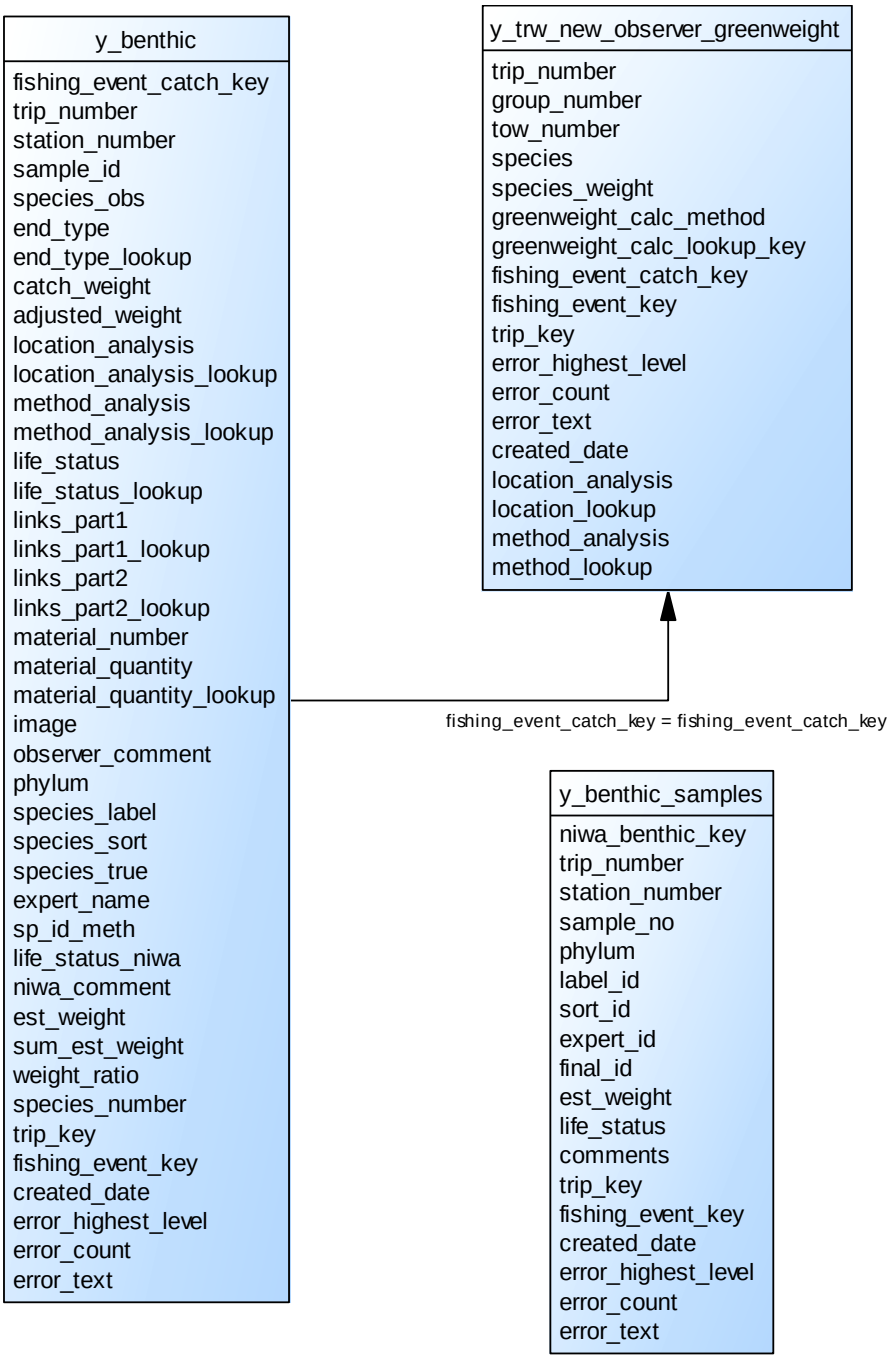

Figure 35: ERD showing the benthic tables in the stage schema, until 2011.

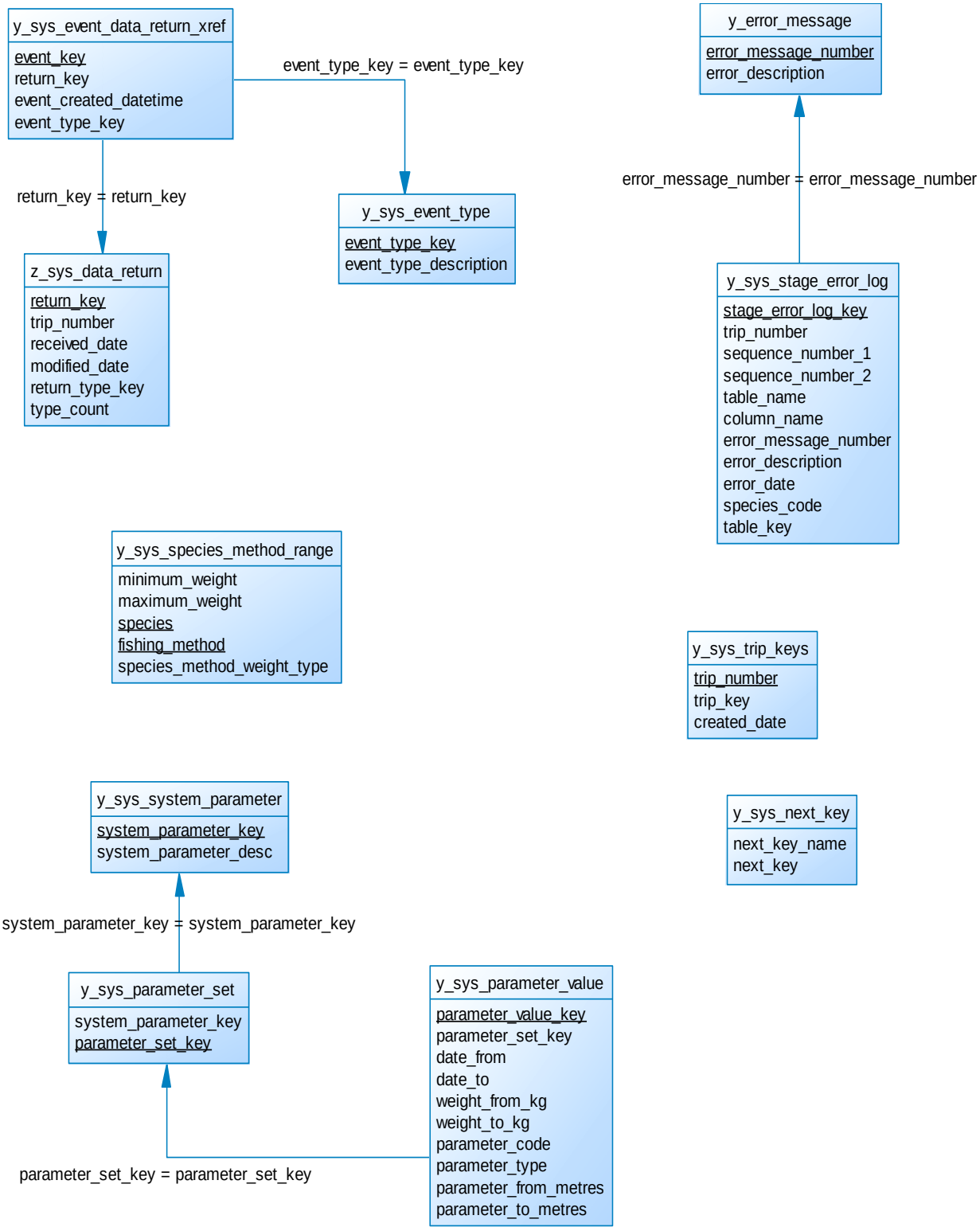

Figure 36: ERD showing the system tables in the stage schema

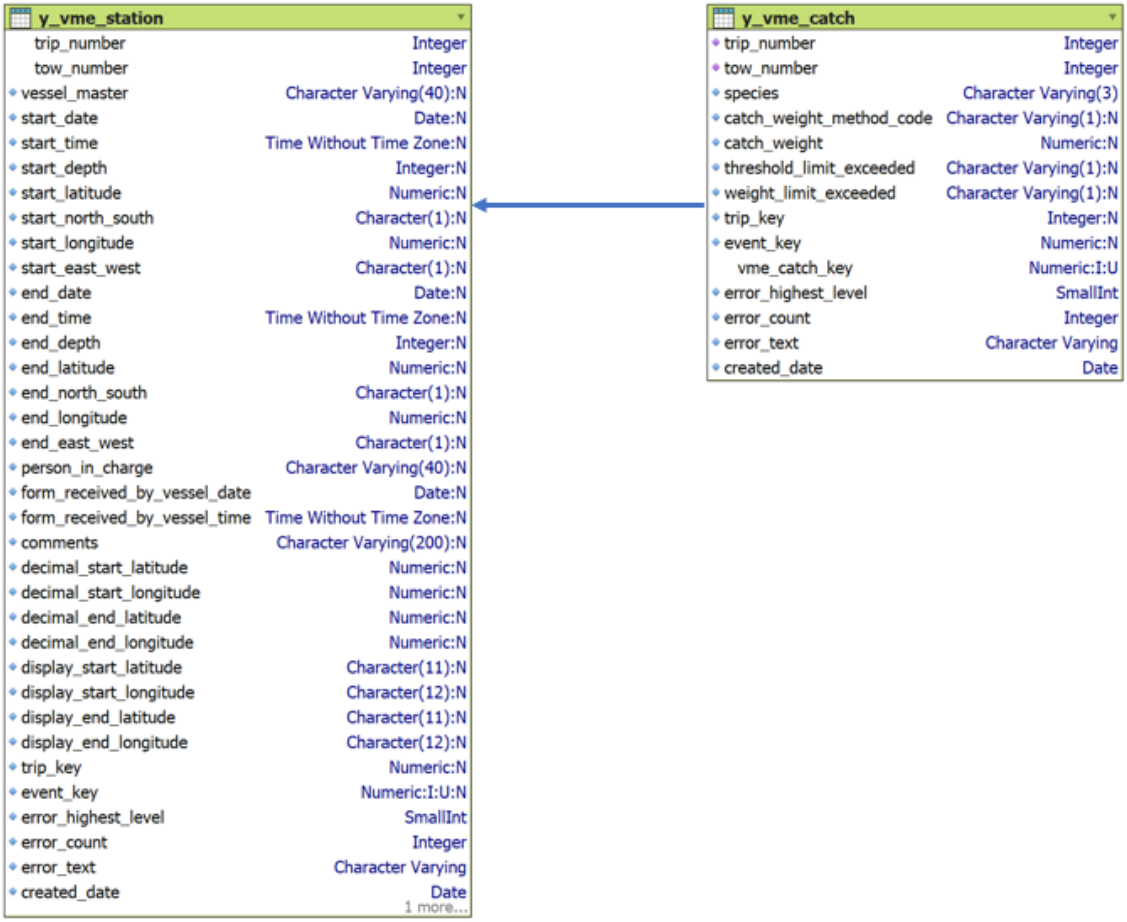

Figure 37: Diagram showing the stage tables for vulnerable marine ecosystem evidence process data.

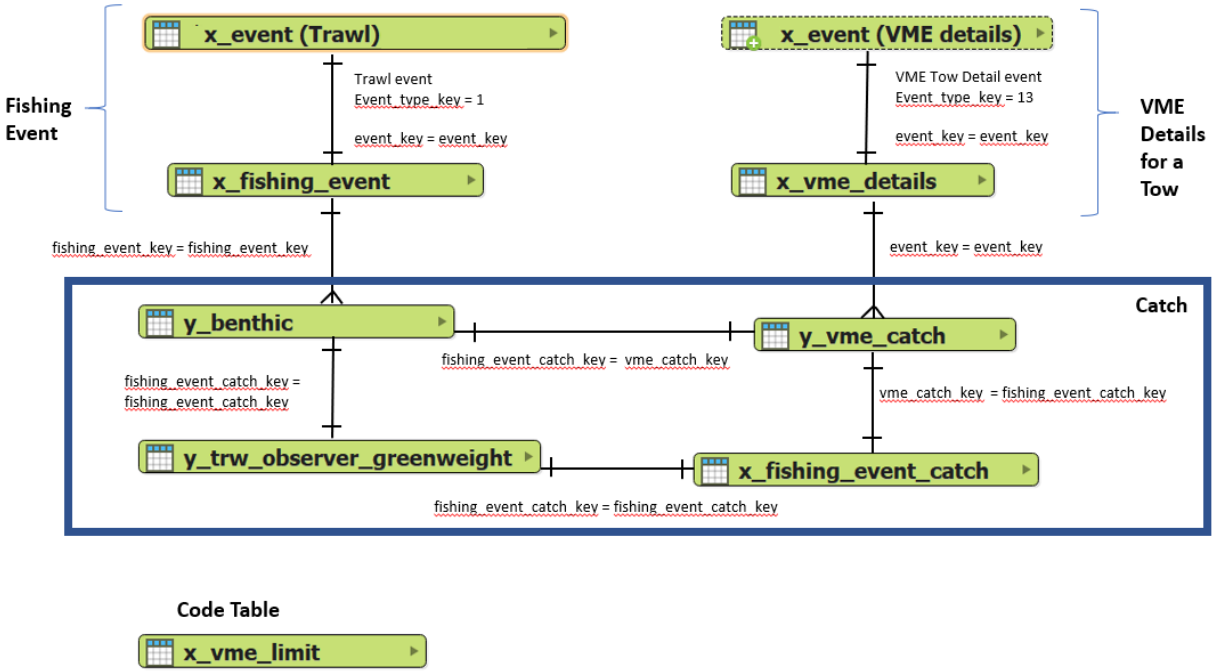

Figure 38: Diagram showing the Stage and Report tables for VME data with respect to catch, showing the relationships to Benthic, Event and Catch tables.

4 Table summaries

The c**od** database can be subdivided into three schemas or sets of tables.
The following is an alphabetical listing and outline of the major tables contained within the 3 schemas in c**od**.

4.1 Load tables (prefixed 'z')

Name	Description
z_benthic	Benthic Materials form.
z_benthic_ccamlr_samples	NIWA identified invertebrate samples that have been collected by NZ observers.
z_benthic_samples	Benthic material sample details, with identification information.
z_bird_baffler	Bird Baffler details form.
z_bird_baffler_comment	Bird Baffler comments.
z_bll_catch	Bottom longline catch log, version 2, June 2019.
z_bll_gear	Bottom long line gear form, version 1, June 2019.
z_bll_haul	Effort data on line hauling activities of bottom longlines, version 2, June 2019.
z_bll_line	Details from a longline set and the corresponding haul of the set.
z_bll_set	Bottom longline setting log, version 2, June 2019.
z_boom_detail	Bird baffler boom details, Up to 4 positions from stern quarter of a vessel.
z_ccamlr_biological	Biological Data from CCAMLR Excel longline logbook.
z_ccamlr_catch	Catch data from CCAMLR Excel longline logbook.
z_ccamlr_haul	Daily hauling observations from CCAMLR Excel longline logbook.
z_ccamlr_set	Daily setting observations from CCAMLR Excel longline logbook.
z_cnv_conv_factor_comm	Scientific Observer Programme conversion factor form comments.
z_cnv_conversion_factor	Details of conversion factor data collected by the SOP.
z_cnv_surimi_conversion_factor	Details of Surimi conversion factor data, collected by the SOP.
z_ctn_catch	Catch data from csv file for some Inshore Interaction trips.
z_ctn_fishing	Fishing event data from Inshore interactions (formerly cetacean) trips.
z_ctn_incident	Inshore interactions (formerly cetacean) incident data, eg non-fish by catch captures and other notable incidents.
z_ctn_processed	Catch processing data from csv file for some Inshore Interaction trips.
z_ctn_sighting	Sightings data from Inshore interactions (formerly Cetacean) trips.
z_ctn_status	Inshore interactions (formerly cetacean) status data, including if observer was on shift and sea state.
z_ctn_voyage	Voyage data from Inshore interactions (formerly cetacean) observations for a trip.
z_historic_coral	

z_historic_non_coral	
z_invertebrate_samples	NIWA invertebrate identification data for SOP samples, from project DAE201001 and subsequent iterations.
z_jig_specs	This table contains data relating to technical specifications of squid jiggers. Data were recorded from fishing licence applications - complete data n/a after 8788 (foreign chartered and domestic only).
z_lfs_catch	Catch data per station, for methods other than trawl including BLL, PS.
z_lfs_fish_biological	Biological data for individual squid & fish specimens sampled by observers.
z_lfs_general_catch_sample	Catch data by tow for all species used for sampling.
z_lfs_length_frequency	Length frequency data for a length class for any one species.
z_lfs_purseseine	Details from Observer Programme Purse Seine Catch Effort and vessel activity log.
z_lfs_station	Station details common to trawls (up to 30-Sep-07 & those sampled), and other methods e.g. longline sets, including date, position and depth of the tow or set.
z_lfs_trawl	Details of the tows for each trip for which length frequency data were collected, that only relate to trawl.
z_mdbd_biological	Data from Middle Depth Biological Data forms.
z_mitigation_description	Descriptions of mitigation devices.
z_mitigation_event	Coded details of any mitigation events during an observation sampling period.
z_mitigation_event_code	Descriptions of mitigation event codes.
z_nfb_autopsy	Nonfish bycatch autopsy data including species identification for seabirds.
z_nfb_nonfish_catch	Catch and biological details of non-fish bycatch.
z_nfb_nonfish_observers	Observers recording the nonfish bycatch.
z_nfb_nonfish_station	Details for stations with non-fish bycatch including extra parameters taken from the vessels tow log.
z_nfb_psi	Observer Protected Species Interactions.
z_nfb_psi_trip	Observer Protected Species Interaction Form Summary.
z_observer_trip_comment	General Comments associated with a trip.
z_observer_trip_master	Header information common to a trip.
z_oto_catalog	A Catalog of the ageing material, its storage location and current ageing status.
z_oto_fish	Biological information about a fish specimen for ageing.
z_oto_material	Coding structure for list of materials used for ageing; e.g., otoliths, vertebrae, scales.
z_oto_origin	Coding structure to identify the origin of the ageing material.
z_ps_activity	Details from Observer Programme Purse Seine vessel activity log.
z_ps_catch	Catch data per set for method Purse-seine (PS).
z_ps_set	Purse seine Catch Effort data from the Observer Purse seine catch Effort Form.
z_ref_observer	The list of Observers who may or have undertaken SOP trips.
z_setnet_catch	Green_weights from the Setnet Catch Effort Form.
z_setnet_gear	Set net gear details.

z_setnet_nets_set	Set net gear used for a set.
z_setnet_station	Setnet effort data from the Observer Setnet Catch/Effort Form.
z_sled_comment	Comments on the SLED.
z_sled_details	Details of the Sea Lion Exclusion Device (SLED).
z_sled_grid	SLED grid bar spacings (mm).
z_sll_2015_deck_log	Catches of specimens (fish, birds, seals, etc) made by tuna longlines, from SLL Deck Log Version 0.1 2015, and the subsequent version.
z_sll_2015_stomach	Stomach sample data from fish caught on tuna surface longlines (SLL) vessels, from 2015 revision of the form.
z_sll_2018_baskets	Surface long line gear, detail on baskets deployed for fishing events. From SLL gear form Version 3, August 2018.
z_sll_2018_gear	Surface long line gear data. From SLL gear form Version 3, August 2018.
z_sll_2018_haul	Effort data on line hauling activities of tuna longlines. From SLL Haul log, version 3, August 2018.
z_sll_2018_set	Effort data on line setting activities of tuna longlines. From SLL Longline Set log, version 3, August 2018.
z_sll_bait	Profile on the bait strategy used on a range of tuna longline sets.
z_sll_bait_code	Lookup list of bait codes used in Surface Long Lining.
z_sll_catch_specimen	Description of catches of specimens (fish, birds, seals, etc) made by tuna longlines.
z_sll_damage_code	Codes to describe the type of damage sustained to a landed specimen.
z_sll_event_code	Event codes used to describe interruptions to hauling and observations of the hauling.
z_sll_events	Profile of events affecting haul/observations.
z_sll_handling_code	Valid specimen handling codes and associated descriptions.
z_sll_haul	Hourly information of observed tuna longline hauls.
z_sll_line_set	Profile information on all observed sets of tuna longlines.
z_sll_processed_code	Valid fish processed codes used in Surface Long Lining.
z_sll_sample_code	Sample codes used to describe the type of sample taken from a specimen.
z_sll_snoods	Profile on the snood arrangement strategy used on a range of tuna longline sets.
z_sll_species_status_code	Valid Species status codes used for Surface Long Lining.
z_sll_specimen_life_code	Valid Specimen life sign codes and descriptions.
z_sll_stomach	Stomach sample data from fish caught on tuna surface longlines (SLL) vessels.
z_sll_trip	Profile information on all observed tuna longline trips.
z_sll_weather_code	Valid Weather codes used for Surface Long Lining.
z_smlf_totals	Totals row from the Length Frequency form.
z_species	Species code table.
z_sys_data_return	General information about a return for a trip (e.g. Trawl, Conversion Factor, Surface LongLine, Non Fish Bycatch) used to control processing the data through the Stage database to the reporting database.

z_sys_return_type	The type of Observer data return being captured, e.g. Trawl, Conversion Factor, Surface LongLine, Non Fish Bycatch etc.
z_tori_2018_line	Tori line details. From Tori line details form, Version 3, August 2018.
z_tori_line	Tori line details form.
z_trawl_gear	Trawl Gear Details Form information.
z_trip_vessel	Details from MPI (OTR) of trip and vessel details, versioned by date_of_report.
z_troll_activities	Activities from the Trolling Hourly Observation form.
z_troll_calibration	Temperature calibration for troll trips.
z_troll_catch	Troll catch for an observed period.
z_troll_configuration	Details about configuration used on a trolling vessel for a fishing trip.
z_troll_diagram	Observer trolling line configuration form diagram.
z_troll_gear	Header details, i.e. regarding the vessel and observer from the Observer Trolling Fishing Gear form.
z_troll_heads	Details about heads from Trolling Fishing Gear Form.
z_troll_hooks	Details about hooks from Trolling Fishing Gear Form.
z_troll_hourly	Observer Trolling Hourly Observations.
z_troll_skirts	Details about skirts from Trolling Fishing Gear Form.
z_troll_temperature	Header details from trolling Temperature Calibration form.
z_trw_2007_bio	Sample weight and method info from the catch and effort logbook 2007 version.
z_trw_2007_green_weights	Green_weights from the catch and effort logbook 2007 version.
z_trw_2007_length	Length data from the catch and effort logbook 2007 version.
z_trw_2007_observer	Trip observer(s) from the catch and effort logbook 2007 version.
z_trw_2007_observer_station	Station data from the catch and effort logbook 2007 version.
z_trw_2007_other_comment	Comments from the catch and effort logbook 2007 version.
z_trw_2007_other_fish	Other fish data from the catch and effort logbook 2007 version.
z_trw_2007_process_comment	Processed weights from the catch and effort logbook 2007 version comments.
z_trw_2007_processed	Processed weights from the catch and effort logbook 2007 version.
z_trw_2007_samples	Sample data from the catch and effort logbook 2007 version.
z_trw_2007_trip	Trip data from the catch and effort logbook 2007 version.
z_trw_new_observer_greenweight	For each tow landed on the vessel, greenweights for each species are estimated. These estimates are recorded in the new_observer_greenweight, which records the trip and station number, the group number, species, estimated greenweight, and codes describing how the greenweight was estimated. This table covers the period

	between 1990 and 2007, the earlier information is recorded in observer_greenweight.
z_trw_new_observer_proc_summ	Summary data for all processed fish products for a species by process group, i.e., a summary of the records held in new_observer_processed, since May 1990.
z_trw_new_observer_processed	Details of processed fish products by species, as recorded in the catch and effort logbook since May 1990.
z_trw_new_observer_station	Station data from the catch and effort logbook since 1997.
z_trw_observer_greenweight	For each tow landed on the vessel, greenweights for each species are estimated. These estimates are recorded in the observer_greenweight, which records the trip and station number, the group number, species, estimated greenweight, and codes describing how the greenweight was estimated.
z_trw_observer_proc_calc	Summary data for each species in observer_processed (only up to April 1990).
z_trw_observer_proc_summary	Summary data for all processed fish products for a species by process group, i.e., a summary of the records held in observer_processed, from 1986 to April 1990.
z_trw_observer_processed	Details of processed fish products by species, as recorded in the catch and effort logbook from 1986 to April 1990.
z_trw_observer_station	Station data from the catch and effort logbook until 1997.
z_vme_catch	Vulnerable Marine Ecosystem Evidence Process, relevant taxonomic groups, weights, and scores.
z_vme_station	Vulnerable Marine Ecosystem Evidence Process, trip and tow information.
z_warp_scarer	Warp scarer details form.
z_warp_strike	Seabird warp-strike observations (trawl) - Fishing event descriptors.
z_warp_strike_capture	Numbers of seabirds recovered from the whole tow.
z_warp_strike_device	Details of mitigation devices or methods used during an observation sampling period.
z_warp_strike_sample	Fifteen minute seabird warp/mitigation device strike observations and bird abundance data.

4.2 Stage tables (prefixed ‘y’)

Name	Description
y_all_other_fish	All other fish data from the catch and effort logbook 2007 version.
y_all_other_fish_comment	Comment from the catch and effort logbook 2007 version.
y_benthic	Benthic Materials stage details table.
y_benthic_samples	Benthic sample details stage table.
y_bird_baffler	Bird Baffler details.
y_bird_baffler_boom	Bird baffler boom details, up to 4 positions from stern quarter of a vessel.
y_bll_gear	Bottom long line gear form, version 1, June 2019.
y_bll_line	Details from a longline set and the corresponding haul of the set.
y_cnv_conv_factor_comm	Scientific Observer Programme conversion factor form comments.
y_cnv_conversion_factor	Details of conversion factor data collected by the SOP.
y_ctn_catch	Catch data for Inshore interaction trips, initially only from Benthic Materials Form. Table added 15Dec2011.
y_ctn_fishing	Fishing event data from Inshore interactions (formerly cetacean) trips.
y_ctn_incident	Inshore interactions (formerly cetacean) incident data, eg non-fish by catch captures and other notable incidents.
y_ctn_sighting	Sightings data from Inshore interactions (formerly Cetacean) trips.
y_ctn_status	Inshore interactions (formerly cetacean) status data, including if observer was on shift and sea state.
y_ctn_voyage	Voyage data from Inshore interactions (formerly cetacean) observations for a trip.
y_error_message	Error messages and associated descriptions.
y_error_message_liua	
y_lfs_catch	Catch data per station, for methods other than trawl, including BLL.
y_lfs_fish_biological	Biological data for individual squid & fish specimens sampled by observers.
y_lfs_general_catch_sample	Catch data by tow for all species used for sampling.
y_lfs_length_frequency	Length frequency data for a length class for any one species.
y_lfs_station	Details common to both trawl (sampled) and longline sets, including date, depth, and position of the tow.
y_lfs_trawl	Details of the tows for each trip for which length frequency data were collected, that only relate to trawl.
y_mitigation_description	Descriptions of mitigation devices.
y_mitigation_event	Coded details of any mitigation events during an observation sampling period.
y_nfb_autopsy	Groomed Nonfish bycatch autopsy and photo id data, including species identification for seabirds. Used to

	update y_nfb_nonfish_catch. Excludes z_nfb_autopsy records where autopsy_type = Interaction.
y_nfb_nonfish_catch	Catch and biological details of non-fish bycatch.
y_nfb_nonfish_catch_2019_format	Catch and biological details of non-fish bycatch.
y_nfb_nonfish_station	Details for stations with non-fish bycatch including position.
y_observer_trip_comment	General comments associated with a trip.
y_observer_trip_master	Header information common to a trip.
y_oto_catalog	A Catalog of the ageing material, its storage location and current ageing status.
y_oto_fish	Biological information about a fish specimen for ageing.
y_oto_material	Coding structure for list of materials used for ageing; e.g., otoliths, vertebrae, scales.
y_oto_origin	Coding structure to identify the origin of the ageing material.
y_processed_comment	Comment for processed catch from the catch and effort logbook 2007 version.
y_ps_activity	Details from Observer Programme Purse Seine vessel activity log.
y_ps_catch	Green_weights from the Purse Seine Catch Effort Form.
y_ps_set	Effort details from Observer Programme Purse Seine Catch Effort form.
y_ref_observer	The list of Observers who may or have undertaken SOP trips.
y_setnet_catch	Green_weights from the Setnet Catch Effort Form.
y_setnet_gear	Set net gear details for a setnet trip.
y_setnet_nets_set	Set net gear used for a set.
y_setnet_station	Setnet effort data from the Observer Setnet Catch/Effort Form.
y_sled_details	Details of the Sea Lion Exclusion Device (SLED).
y_sled_grid	SLED grid bar spacings.
y_sll_2015_stomach	Stomach sample data from fish caught on Surface Long Line vessels, 2015 version.
y_sll_2018_baskets	Surface long line gear, detail on baskets deployed for fishing events. From SLL gear form Version 3, August 2018.
y_sll_2018_gear	Surface long line gear data. From SLL gear form Version 3, August 2018.
y_sll_2018_haul	Effort data on line hauling activities of tuna longlines. From SLL Haul log, version 3, August 2018.
y_sll_2018_set	Effort data on line setting activities of tuna longlines. From SLL Longline Set log, version 3, August 2018.
y_sll_bait	Profile on the bait strategy used on a range of tuna longline sets.
y_sll_bait_code	Lookup list of bait codes used in Surface Long Lining.
y_sll_catch_specimen	Description of catches of specimens (fish, birds, seals, etc) made by tuna longlines.
y_sll_damage_code	Codes to describe the type of damage sustained to a landed specimen.

y_sll_event_code	Event codes used to describe interruptions to hauling and observations of the hauling.
y_sll_events	Profile of events affecting fishing effort such as SLL haul observations.
y_sll_handling_code	Valid Specimen handling codes and associated descriptions.
y_sll_haul	Hourly information of observed tuna longline hauls.
y_sll_line_set	Profile information on all observed sets of tuna longlines.
y_sll_processed_code	Valid fish processed codes used in Surface Long Lining.
y_sll_sample_code	Sample codes used to describe the type of sample taken from a specimen.
y_sll_snoods	Profile on the snood arrangement strategy used on a range of tuna longline sets.
y_sll_species_status_code	Valid Species status codes used for Surface Long Lining.
y_sll_specimen_life_code	Valid Specimen life sign codes and descriptions.
y_sll_stomach	Stomach sample data from fish caught on tuna surface longlines (SLL) vessels.
y_sll_weather_code	Valid Weather codes used for Surface Long Lining.
y_sys_next_key	Table to generate next keys.
y_sys_stage_error_log	A log of all errors found in processing the data.
y_sys_trip_keys	Table to store a trip key for each trip.
y_tori_2018_line	Tori line details. From Tori line details form, Version 3, August 2018.
y_tori_line	Tori line details.
y_trawl_components	Stores the codes for each groundgear component and general feature of a trawl gear system, recorded in the y_trawl_gear table, with the associated lookup key.
y_trawl_gear	Details of each separate trawl gear system used by a vessel.
y_trip_observer	Observer details for a trip.
y_trip_vessel	Details from MPI (OTR) of trip and vessel details.
y_troll_activities	Activities from the Trolling Hourly Observation form.
y_troll_calibration	Calibration calibration for troll trips.
y_troll_catch	Troll catch for an observed period.
y_troll_configuration	Details about configuration used on a trolling vessel for a fishing trip.
y_troll_gear	Vessel and observer details from the Observer Trolling Fishing Gear form.
y_troll_heads	Details about heads from Trolling Fishing Gear Form.
y_troll_hooks	Details about hooks from Trolling Fishing Gear Form.
y_troll_hourly	Hourly observations of trolling effort.
y_troll_skirts	Details about skirts from Trolling Fishing Gear Form.
y_troll_temperature	Header details from trolling Temperature Calibration form.
y_trw_new_observer_greenweight	For each tow landed on the vessel, greenweights for each species are estimated. These estimates are recorded in the new_observer_greenweight, which records the trip and station number, the group

	number, species, estimated greenweight, and codes describing how the greenweight was estimated.
y_trw_new_observer_proc_summary	Summary data for all processed fish products for a species by process group, i.e., a summary of the records held in new_observer_processed, since May 1990.
y_trw_new_observer_processed	Details of processed fish products by species, as recorded in the catch and effort logbook since May 1990.
y_trw_new_observer_station	Station data from the catch and effort logbook since 1997.
y_trw_observer_greenweight	For each tow landed on the vessel, greenweights for each species are estimated. These estimates are recorded in the observer_greenweight, which records the trip and station number, the group number, species, estimated greenweight, and codes describing how the greenweight was estimated.
y_trw_observer_proc_calc	Summary data for each species in observer_processed (only up to April 1990).
y_trw_observer_proc_summary	Summary data for all processed fish products for a species by process group, i.e., a summary of the records held in observer_processed, from 1986 to April 1990.
y_trw_observer_processed	Details of processed fish products by species, as recorded in the catch and effort logbook from 1986 to April 1990.
y_trw_observer_station	Station data from the catch and effort logbook until 1997.
y_vme_catch	Catch data for the Vulnerable Marine Ecosystem Evidence Process form, variable version.
y_vme_station	Station data for the Vulnerable Marine Ecosystem Evidence Process form, variable version.
y_warp_scarer	Warp scarer details.
y_warp_strike	Seabird warp-strike observations (trawl) - Fishing event descriptors.
y_warp_strike_capture	Numbers of seabirds recovered from the whole tow, only up to trip number 2306.
y_warp_strike_device	Details of mitigation devices or methods used during an observation sampling period.
y_warp_strike_sample	Fifteen minute seabird warp/mitigation device strike observations and bird abundance data.

4.3 Report tables (prefixed ‘x’)

Name	Description
x_area_ref	A defined area of interest in Fisheries Management e.g. FMA, Statistical Area, QMA.
x_bait_usage	Profile on the bait strategy used on a range of tuna longline sets
x_bird_baffler	Bird Baffler details.
x_bird_baffler_boom	Bird baffler boom details, up to 4 positions from stern quarter of a vessel.
x_bll_gear	Bottom long line gear form, version 1, June 2019.
x_bottom_lining_effort	Specific Bottom Lining related fishing effort information.
x_bycatch_incident	Details for stations with non-fish bycatch including position.
x_bycatch_incident_catch	Catch and biological details of non-fish bycatch.
x_conversion_factor	Scientific Observer Programme conversion factor data.
x_conversion_factor_comment	Scientific Observer Programme conversion factor form comments.
x_date_dim	Links each date to the associated day of the week, day of the year, week number, month, calendar year, ministry fishing year.
x_event	An fishing related event of interest to the Scientific Observer Program e.g Fishing, Processing of Catch.
x_event_extra_positions	Extra date, time and position (latitude/longitude) data relating to events associated with a fishing trip.
x_event_type	Type structure to identify the different types of event, e.g. Age Event, Fishing Event, Processing Event.
x_fishing_effort_event	A link between an observer event associated with fishing effort e.g a Surface Lining Event and its associated Set.
x_fishing_effort_extra_info	Additional information captured about a series of fishing events e.g use of baits or snoods on a series of sets.
x_fishing_event	Generic information associated with a set of fishing effort.
x_fishing_event_biological	Biological data for individual squid & fish specimens sampled by observers.
x_fishing_event_catch	Species specific catch associated with a set of fishing effort.
x_fishing_event_catch_sample	Catch data by tow for all species used for sampling.
x_fishing_event_catch_specimen	Description of catches of specimens (fish, birds, seals, etc) made by tuna longlines.
x_fishing_event_comment	Fishing event comments, eg from BLL, SLL events.
x_fishing_event_usage	The usage of generalised fishing information on specific sets of effort e.g. Bait or Snood Usage on specific sets (between the start and end set numbers).
x_fishing_gear	Trolling Fishing Gear Form information.
x_fishing_method	List of valid fishing methods, e.g. MW Midwater Trawl, SLL Surface Longlining etc.
x_fma_ref	Reference table to define the New Zealand Fisheries Management Areas.
x_haul_effort	Hourly information of observed tuna longline hauls.
x_length_frequency	Length frequency data for a length class for any one species.
x_lining_haul_effort	Profile information on observed hauls of longline vessels

x_lining_haul_observation	Haul observation periods and numbers of hooks observed hauled, from observed haul events on longline vessels.
x_lookup_code	Generalised lookup code structure to include all 'one-off' code value/ description pairs
x_lookup_type	Descriptions for each look-up code type. e.g. 22 = Beaufort scale of wind force.
x_mitigation_description	Descriptions of mitigation devices.
x_mitigation_event	Coded details of any mitigation events during an observation sampling period.
x_nz_coastlines_islands_ref	Reference table to define the New Zealand coastline and islands.
x_oto_catalog	A Catalog of the ageing material, its storage location and current ageing status.
x_oto_fish_event	Biological Information about a fish specimen for aging.
x_processed_event_catch_detail	Specific species processed catch information.
x_processed_species_summary	Summary data for each species in observer_processed (only up to April 1990).
x_processing_event	Summary information about on-board processing for a tow or group of tows.
x_processing_event_catch	Summary catch information associated with a days processing on a vessel.
x_purseseine_activity	Details from all activities recorded on the observer programme purse seine Vessel Activity log (includes sets).
x_purseseine_effort	Set effort details from the Observer Programme Purse Seine Catch Effort form.
x_ref_observer	The list of Observers who may or have undertaken trips for the observer programme.
x_setnet_effort	Setnet effort data from the Observer Setnet catch/Effort Form, and total_net_length from NOMAD data.
x_setnet_gear	Set net gear details for a setnet trip.
x_setnet_nets_set	Set net gear used for a set.
x_sighting	Inshore interactions data related to observer sightings.
x_sled_details	Details of the Sea Lion Exclusion Device (SLED).
x_sled_grid	Sled grid bar spacings.
x_sll_baskets	Surface long line gear, detail on baskets deployed for fishing events. From SLL gear form Version 3, August 2018.
x_sll_gear	Surface long line gear data. From SLL gear form Version 3, August 2018.
x_snood_usage	Profile on the snood arrangement strategy used on a range of tuna longline sets.
x_species_codes	Valid Species codes.
x_specimen_stomach	Stomach sample data from fish caught on tuna surface longlines (SLL) vessels. See also table x_stomach_contents.
x_stat_area_ref	Reference table to define the general New Zealand Fisheries Statistical areas.
x_status	Inshore interactions status data, including if and where observer was on shift.
x_stomach_contents	Stomach sample data from fish caught on Surface Long Line vessels, 2015 version.

x_surface_lining_bait	Information on bait species used on observed sets of Tuna longline vessels.
x_surface_lining_effort	Profile information on all observed sets of tuna longlines.
x_tori_line	Tori line details.
x_trawl_components	Stores the codes for each groundgear component and general feature of a trawl gear system, recorded in the x_trawl_gear table, with the associated lookup key.
x_trawl_effort	Specific Trawl related fishing effort information.
x_trawl_gear	Details of each separate trawl gear system used by a vessel.
x_trip	Header information common to a trip.
x_trip_comments	Comments relating to a trip, identified by the trip and type of comment.
x_trip_comments_type	Type code to identify the type of comments attached to the trip e.g. Station Comments, Bird Device Comments.
x_trip_observer	Observer details for a trip.
x_troll_configuration	Details about line configuration used on a trolling vessel for a fishing trip.
x_troll_effort	Specific Troll related fishing effort information.
x_troll_heads	Details about heads used with trolling fishing gear.
x_troll_hooks	Details about hooks used with trolling fishing gear.
x_troll_skirts	Details about skirts used with trolling fishing gear.
x_vme_details	VME specific station data for the Vulnerable Marine Ecosystem Evidence Process form, variable version.
x_vme_limit	Vulnerable Marine Ecosystem Evidence Process, weight and threshold limits per form version.
x_warp_scarer	Warp scarer details.
x_warp_strike	Seabird warp-strike observations (trawl) - Fishing event descriptors.
x_warp_strike_capture	Numbers of seabirds recovered from the whole tow.
x_warp_strike_device	Details of any mitigation devices or methods used during an observation sampling period.
x_warp_strike_sample	Fifteen minute seabird warp/mitigation device strike observations and bird abundance data.

5 Table descriptions

The following are the main tables within the **cod** including attribute names, data types, and comments, listed in alphabetical order within each section.

5.1 Load tables (prefixed 'z')

Table z_benthic

Comment: Benthic Materials form.

Column	Type	Null?	Description
benthic_key	numeric(9,0)	No	Benthic key.
trip_number	integer		Trip number for an observed trip.
station_no	character varying(8)		Station number as sequential number for each station (tow).
obs1	character varying(32)		First letter of first name then first 3 letters of surname.
obs2	character varying(32)		As for obs 1
sample_id	character varying(5)		Number each individual item or species caught in the trip from 1 onwards, regardless of the species or tow in which it was caught
species	character varying(32)		3 letter code for the benthic material caught.
end_type	character varying(32)		End destination of the material: ACC = Accidentally lost ALI = Discarded alive (likely to survive) DIS = Discarded dead MEA = Used for meal EAT = Taken to galley RET = Retained by observer RDI = Sample retained by observer, remainder discarded PRO =Processed by vessel.
weight	character varying(8)		The weight of the benthic material recorded for the sample, to nearest 1 kg or 0.1kg depending on scale used.

location_analysis	character(1)	Weight method - location part.
method_analysis	character varying(3)	The method of analysis of weight.
life_status	character varying(32)	Life status of the benthic material when it was freshly caught: 1 = Appeared Alive 2 = Non - biological or Dead (showing no signs of life) 3 - Do not use 4 = Decomposing 5 = Unknown (e.g. not recovered).
links_part1	character varying(32)	Part 1 of code that records associations. The first part of the code records whether this piece of benthic material was living on (encrusting) anything. First part: 0 = Not encrusting anything. 1 = Encrusting non-living material. 2 = Encrusting living material.
links_part2	character varying(32)	Part 2 of code that records associations. The second part records whether something was living on this piece of benthic material. Second part: 0 = Not encrusted by anything. 1 = Encrusted by living material.
material_number	character varying(8)	Count of the colonies (corals, anemones bryozoans and sponges etc), individuals (annelids, molluscs, arthropods and echinoderms etc) or pieces (rocks, wood etc) of benthic material
material_quantity	character(1)	Code for approximately how many colonies, individuals or pieces of this type of benthic material are in this sample ID. U = Unknown/unable to be assessed. A = 1-5 B = 6-12 C = 13-25 D = 26-50 E = 51-100 F = 101-200 G = 201-500 H = 501-1000

		I = >1000.
image	character varying(32)	Photograph(s) of sample taken, Y = Yes or N = No.
fnz_image_filename	character varying(256)	Image filename(s) of the sample - filename given by FNZ.
comments	character varying(540)	Comments
page_number	smallint	Page number for this trip
last_page	character(1)	Is this form the last page for this trip.

Indexes:
"pk_z_benthic" PRIMARY KEY, btree (benthic_key)
"indx_z_benthic_trip" btree (trip_number)

Table z_benthic_ccamlr_samples

Comment: NIWA identified invertebrate samples that have been collected by NZ observers.

Column	Type	Null?	Description
vessel_name	character varying(50)		The name of the vessel.
trip_number	bigint	No	The Trip number allocated by the SOP.
tow_number	character varying(50)	No	Identifier for each tow.
segment_no	character varying(20)		Segment or part of a longline represented by 1,000 hook increments.
niwa_sub_sample_no	character varying(40)		NIWA assigned sample number for assesment of whether or not a specimen was kept
collected_date	character varying(30)		Date sample was collected
observer_name	character varying(50)		Full Name of the observer in <First Name> < Last Name> format.
phylum_group	character varying(30)		The Phylum group of the specimen
label_code	character varying(40)		The label code of the specimen
ccamlr_species_code	character(3)		The species code as assigned by the Observer
niwa_species_code	character(3)		The species code as assigned by NIWA scientist
actual_tax_species	character varying(70)		The actual taxonomic name of the species
taxonimist	character(40)		The name of the NIWA Taxonomist
photo	character(1)		Was there a photo of the specimen taken
no_specimens	integer		The number of specimens kept by NIWA of this species
sample_weight	character(8)		Weight (kg) of the sample taken.
sample_description	character varying(512)		Description of sample taken.
alive_code	character varying(8)		Whether the specimen was taken alive i.e. 1= alive, 2= dead, 3= killed, 4= decomposing.
check_date	character varying(10)		The date the sample was checked by NIWA scientist
trip_id	character varying(50)	No	A combination of trip_number, tow_number and segment
taxa_observed	character varying(20)		Species code assigned by NIWA scientist if specimen was observed
observer_id	character varying(20)		Species code assigned by Observer at sea
niwa_specimen_name	character varying(40)		Name of the specimen as assigned by NIWA scientist
observer_specimen_name	character varying(40)		Name of the specimen as assigned by Observer
kept	character varying(30)		
expert_code	character(3)		

expert_id	character varying(50)
expert_taxonomist	character(20)

Table z_benthic_samples

Comment: Benthic material sample details, with identification information.

Column	Type	Null?	Description
sample_benthic_key	bigint	No	System generated unique key for the sample record.
vessel_name	character varying(30)		The name of the vessel.
trip_number	character varying(20)		Trip number for an observed trip.
station_number	character varying(20)		Station number is a sequential identifier of each tow or set of a trip.
sample_no	character varying(12)		The sample number of the sample, should equate to an Observer sample ID.
entered_by	character varying(32)		
sample_type	character varying(32)		Sample type during the sorting of samples (by niwa staff).
phylum	character varying(30)		Phylum of the specimen.
label_id	character varying(20)		Species code recorded on the sample label by the observer.
sort_id	character varying(20)		Species code assigned during the sorting of samples (by niwa staff).
expert_sci	character varying(40)		Taxonomists ID or expert ID (sci name).
final_id	character varying(20)		Species code assigned from identification in expert_sci.
ident_method	character varying(16)		Identification method used, e.g. sight or photo.
determination_date	date		Date of Taxonomists identification.
est_weight	numeric(9,3)		Estimated weight of the sample specimen. Weighted in gms.
no_of_specimens	integer		The number of specimens in the sample.
life_status	character varying(16)		Code for specimen was Dead or Alive
comments	character varying(512)		Comments by staff processing samples.
taxonomist	character varying(32)		The identification taxonomist name.
last_edited_by	character varying(32)		Name of the person to last edit the record.
last_edited_date	date		Date of the last edit on the record.
project_code	character varying(16)		The applicable project code for the sample.

Indexes:
  "pk_z_benthic_samples" PRIMARY KEY, btree (sample_benthic_key)

Table z_bird_baffler

Comment: Bird Baffler details form.

Column	Type	Null?	Description
baffler_key	bigint	No	System generated key to identify the bird baffler.
trip_number	integer		Trip number for an observed trip.
obs1	character(5)		First initial followed by the first three letters of observers surname involved in the measurement of the bird baffler.
obs2	character(5)		As for obs 1
equipment_code	character(3)		Equipment code consisting of the letter B plus a number. Each device measured during the trip is numbered from 1 onwards.
measure_date	date		Date that the measurements were made.
measure_reason	character(1)		Code to explain why this measurement was taken: I = Initial measurement D = description of the device in a Damaged state R = measurement of the device after it has been Repaired O = some Other reason for this measurement.
measure_type	character(1)		Full (F) to indicate that this is a full record of measurements or Partial (P) for the device that has had a full measurement and has then been altered.
partial_base	character(3)		Where a Partial measurement the Equipment Code (eg B1) of the bird baffler that has been altered.
method_attach_location	character(1)		A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates.
method_angle	character(1)		A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates.
method_inner_dropper	character(1)		A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates.
method_outer_dropper	character(1)		A = Accurately measured. C = Measurements are Compared with a known length.

method_spacing	character(1)	E = measurements are Estimates A = Accurately measured. C = Measurements are Compared with a known length.
method_line_length	character(1)	E = measurements are Estimates A = Accurately measured. C = Measurements are Compared with a known length.
method_object_length	character(1)	E = measurements are Estimates A = Accurately measured. C = Measurements are Compared with a known length.
method_surface	character(1)	E = measurements are Estimates A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates

Indexes:
  "pk_z_bird_baffler" PRIMARY KEY, btree (baffler_key)
  "indx_bird_trip" btree (trip_number)
Referenced by:
  TABLE "z_bird_baffler_comment" CONSTRAINT "fk_z_bird_b_reference_z_bird_b" FOREIGN KEY (baffler_key)
   REFERENCES z_bird_baffler(baffler_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "z_boom_detail" CONSTRAINT "fk_z_boom_d_reference_z_bird_b" FOREIGN KEY (baffler_key)
   REFERENCES z_bird_baffler(baffler_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_bird_baffler_comment

Comment: Bird Baffler comments.

Column	Type	Null?	Description
baffler_key	bigint	No	System generated key to identify the bird baffler.
trip_number	integer		Trip number for an observed trip.
equipment_code	character(3)		Equipment code consisting of the letter B plus a number.
comments	character varying(900)		
form_number	integer		Page number for this trip.
last_page	character(1)		Is this form the last page for this trip, Y = Yes or N = No.

Indexes:
"pk_z_bird_baffler_comment" PRIMARY KEY, btree (baffler_key)
"indx_bird_com_trip" btree (trip_number)
Foreign-key constraints:
"fk_z_bird_b_reference_z_bird_b" FOREIGN KEY (baffler_key)
REFERENCES z_bird_baffler(baffler_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_bll_catch

Comment: Bottom longline catch log, version 2, June 2019.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
set_number	character varying(3)		Number assigned by observers to a distinct observed set.
observer_code	character varying(5)		Observer code, typically first name initial followed by the first three letters of observers surname.
catch_assessment	character varying(2)		Two digit code to indicate which parts of the set have been observed - setting, hauling and catch.
species	character(3)		Three character species code.
number_of_fish	character varying(4)		Total number of fish of this species that were caught in this set.
greenweight	character varying(5)		Total weight of the species caught before processing (kg).
method_analysis1	character varying(1)		First part of weight method analysis code, indicating device used to weigh the fish.
method_analysis2	character varying(1)		Second part of weight method analysis code, indicating the method for determining greenweight.
end_status	character varying(3)		Three character code for final end state of each fish.
form_version	character(20)		Version of the Bottom longline catch form.
comments	character varying		Observer comments during the catch event.
page_number	integer		Page number of the Catch Log form for this trip.
number_of_pages	integer		Number of pages of the Catch Log form for this trip.

Table z_bll_gear

Comment: Bottom long line gear form, version 1, June 2019.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
observer_code	character(5)		Observer code, typically first name initial followed by the first three letters of observers surname.
gear_code	character varying(5)		Code used as unique identifier for a single Longline configuration.
vessel_name	character varying(50)		Name of the vessel.
mainline_material	character(1)		Material used in mainline construction.
mainline_diameter	character(5)		Diameter of the mainline/backbone (mm).
integrated_weight_line	character(3)		Weight per metre of integrated weight line (g).
mainline_weight	character(3)		Average weight of the weights attached to the backbone.
max_float_diameter	character(2)		Diameter of the largest float attached to the main line (cm).
drop_line_length	character(3)		Length of the line between the surface float and the anchor (m). Dahn line only.
hooks_number_ssf	character(3)		Total number of hooks attached to the drop line, between the subsurface float and the anchor.
distance_ss_floats	character(3)		Average distance between subsurface floats (m).
weight_under_ssf	character(3)		Average weight of the weights attached to any subsurface floats (kg).
weight_material_ssf	character(1)		Material for subsurface weights: M = Metal weights N = Non-metal weights.
avg_distance_weights	character(3)		Average distance along the mainline between weights (m).
weight_material	character(1)		Material for mainline weights: M = Metal weights N = Non-metal weights.
hooks_between_weights	character(3)		Average number of hooks between weights.
dropper_length	character(3)		Average length of the dropper line attaching weights to the backbone (m).
branchline_material	character(1)		Main material used for branch lines/snoods: M=Monofilament R=Rope O=Other (describe in comments).

branchline_snood_length	character(3)	Average length of a branch line/snood (cm).
branchline_snood_spacing	character(3)	Average spacing between snoods (m).
hook_type	character(1)	Hook type used by the vessel: C=Circle hook J=Traditional J hook O=Other (describe in comments).
hook_size	character(4)	Hook size written on the packaging.
bait_method	character(1)	Method of baiting: M= Manually baited (by hand) A= Automatic baiting machine used.
form_version	character(20)	Version of the Bottom longline gear form.
comments	character varying(500)	Observer comment on longline gear configuration.

Table z_bll_haul

Comment: Effort data on line hauling activities of bottom longlines, version 2, June 2019.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
set_number	character varying(3)		Number assigned by observers to a distinct observed set.
observer_code	character varying(5)		Observer code, typically first name initial followed by the first three letters of observers surname.
end_hauled_first	character varying(1)		Which end of line hauled first: 0 = Unknown, 1 = End set first, 2 = End set last.
start_recd_by_obs	character varying(1)		Whether hauling start details were recorded by: Y = observer, or N = vessel.
start_date	character varying(8)		Start date of hauling.
start_time	character varying(4)		Start time of hauling (NZST 24hr).
start_depth	character varying(4)		Seabed depth at start of hauling (m).
start_latitude	character varying(5)		Latitude at start of hauling (DDMM.m format).
start_north_south	character varying(1)		Northern or Southern Hemisphere for start latitude.
start_longitude	character varying(6)		Longitude at start of hauling (DDDMM.m format).
start_east_west	character varying(1)		Eastern or Western hemisphere for start longitude.
end_recd_by_obs	character varying(1)		Whether hauling end details were recorded by: Y = observer, or N = vessel.
end_date	character varying(8)		End date of hauling.
end_time	character varying(4)		End time of hauling (NZST 24hr).
end_depth	character varying(4)		Seabed depth at end of hauling (m).
end_latitude	character varying(5)		Latitude at end of hauling (DDMM.m format).
end_north_south	character varying(1)		Northern or Southern Hemisphere for end latitude.
end_longitude	character varying(6)		Longitude at end of hauling (DDMM.m format).
end_east_west	character varying(1)		Eastern or Western hemisphere for end longitude.
conditions_timing	character varying(1)		Period of hauling when the observation was made: S = Start of hauling, M = Mid-point of hauling, E = End of hauling.
time_conditions_assessed	character varying(4)		Time when assessment of conditions was made (NZST 24hr).
cloud_cover	character varying(3)		Cloud cover estimate percentage at S/M/E period of hauling.
wind_direction	character varying(3)		Wind direction (0-359 degrees) at S/M/E period of hauling.

beaufort	character varying(2)	Beaufort scale that represents the sea state at S/M/E period of hauling.
vessel_speed	character varying(4)	Vessel speed (knots) at S/M/E period of hauling.
entire_haul_observed_yn	character varying(1)	Whether the entire haul was observed (Y/N).
period_1_start_time	character varying(4)	Start time of observation period 1.
period_1_end_time	character varying(4)	End time of observation period 1.
period_1_hooks_observed	character varying(5)	Number of hooks observed hauled in period 1.
period_2_start_time	character varying(4)	Start time of observation period 2.
period_2_end_time	character varying(4)	End time of observation period 2.
period_2_hooks_observed	character varying(5)	Number of hooks observed hauled in period 2.
period_3_start_time	character varying(4)	Start time of observation period 3.
period_3_end_time	character varying(4)	End time of observation period 3.
period_3_hooks_observed	character varying(5)	Number of hooks observed hauled in period 3.
period_4_start_time	character varying(4)	Start time of observation period 4.
period_4_end_time	character varying(4)	End time of observation period 4.
period_4_hooks_hauled	character varying(5)	Number of hooks observed hauled in period 4.
period_5_start_time	character varying(4)	Start time of observation period 5.
period_5_end_time	character varying(4)	End time of observation period 5.
period_5_hooks_hauled	character varying(5)	Number of hooks observed hauled in period 5.
period_6_start_time	character varying(4)	Start time of observation period 6.
period_6_end_time	character varying(4)	End time of observation period 6.
period_6_hooks_hauled	character varying(5)	Number of hooks observed hauled in period 6.
fishing_gear_discard_yn	character varying(1)	Whether fishing gear was discarded (Y/N).
number_hooks_lost	character varying(5)	Number of hooks lost, excluding those deliberately cut off.
haul_location_port	character varying(1)	Whether hauling station was located at port (Y/null).
haul_location_stbd	character varying(1)	Whether hauling station was located at starboard (Y/null).
haul_location_stern	character varying(1)	Whether hauling station was located at stern (Y/null).
port_offal_discard	character varying(1)	Code for offal, bait and whole fish discarding on port/starboard/stern: C = Discarded continually, O = Discarded sporadically, B = Retained and batch discarded one holding bin is full, R = Retained and discarded once hauling complete.
port_bait_discard	character varying(1)	Code for bait discarding on port side.
port_whole_fish_discard	character varying(1)	Code for whole fish discarding on port side.

stbd_offal_discard	character varying(1)	Code for offal discarding on starboard side.
stbd_bait_discard	character varying(1)	Code for bait discarding on starboard side.
stbd_whole_fish_discard	character varying(1)	Code for whole fish discarding on starboard side.
stern_offal_discard	character varying(1)	Code for offal discarding aft over stern.
stern_bait_discard	character varying(1)	Code for bait discarding aft over stern.
stern_whole_fish_discard	character varying(1)	Code for whole fish discarding aft over stern.
water_deterrent_used_yn	character varying(1)	Whether water deterrents were used as a mitigation strategy for protected species captures (Y/N)
acoustic_deterrent_used_yn	character varying(1)	Whether acoustic bird deterrents were used as a mitigation strategy for protected species captures (Y/N).
bird_exclusion_used_yn	character varying(1)	Whether bird exclusion devices were used as a mitigation strategy for protected species captures (Y/N).
other_mitigation_used_yn	character varying(1)	Whether any other mitigation devices were used during the haul (Y/N). Detailed in observer comments.
predation_evidence_yn	character varying(1)	Whether any evidence of marine mammal predation during the haul (Y/N).
number_of_fish_predated	character varying(4)	Number of fish predated by marine mammals.
form_version	character(20)	Version of the Bottom longline hauling form.
comments	character varying	Observer comments on line hauling event.

Table z_bll_line

Comment: Details from a longline set and the corresponding haul of the set.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
station_number	integer	No	Sequential identifier for each station (tow).
topography_code	character(1)		Numeric code to describe the bottom contour.
hooks_number	integer		The number of hooks set.
bait1_species	character(3)		Species code for the principle bait species used.
bait2_species	character(3)		Species code for the 2nd most relevant bait species used.
hooks_baited_percentage	numeric(7,3)		The percentage of hooks that were baited.
length_frequency_taken_yn	character(1)		Whether Length Frequency was done on fish from this set? Y = Yes, N = No.
hooks_lost_number	integer		The number of hooks lost.
catch_assessment_code	character(4)		Code to identify the catch assessment for the degree of observation by the observer.
line_comments	character varying(800)		Comments about the longline set.

Indexes:
"pk_z_bll_line" PRIMARY KEY, btree (trip_number, station_number)
Foreign-key constraints:
"fk_z_bll_line__z_lfs_station" FOREIGN KEY (trip_number, station_number)
REFERENCES z_lfs_station(trip_number, station_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_bll_set

Comment: Bottom longline setting log, version 2, June 2019.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
set_number	character varying(3)		Number assigned by observers to a distinct observed set.
target_species	character varying(3)		Nominal vessel target species for this setting event.
observer_code	character varying(5)		Observer code, typically first name initial followed by the first three letters of observers surname.
vessel_name	character varying(30)		Name of vessels recorded by observers.
start_rec_by_obs	character varying(1)		Whether setting start details were recorded by: Y = observer, or N = vessel.
start_date	character varying(8)		Start date of setting.
start_time	character varying(4)		Start time of setting.
start_depth	character varying(4)		Seabed depth at start of setting (m).
start_latitude	character varying(5)		Latitude at start of setting (DDMM.m format).
start_north_south	character varying(1)		Northern or Southern Hemisphere for start latitude.
start_longitude	character varying(6)		Longitude at start of setting (DDDMM.m format).
start_east_west	character varying(1)		Eastern or Western hemisphere for start longitude.
end_rec_by_obs	character varying(1)		Whether setting end details were recorded by: Y = observer, or N = vessel.
end_date	character varying(8)		End date of setting.
end_time	character varying(4)		End time of setting.
end_depth	character varying(4)		Seabed depth at end of setting (m).
end_latitude	character varying(5)		Latitude at end of setting (DDMM.m format).
end_north_south	character varying(1)		Northern or Southern hemipshere for end latitude.
end_longitude	character varying(6)		Longitude at end of setting (DDDMM.m format).
end_east_west	character varying(1)		Eastern or Western hemisphere for end longitude.
cloud_cover	character varying(3)		Cloud cover percent at start of setting.
wind_direction	character varying(3)		Wind direction (bearing 0-359) at start of setting.
beaufort	character varying(2)		Beaufort scale conditions at start of setting.
period_1_start	character varying(4)		Start time of observation period 1.
period_1_end	character varying(4)		End time of observation period 1.
period_1_hooks_observed	character varying(5)		Total number of hooks observed during period 1.

period_1_hooks_baited_perc	character varying(3)	Percentage of hooks baited from a sample of 100 hooks observed during period 1.
period_2_start	character varying(4)	Start time of observation period 2.
period_2_end	character varying(4)	End time of observation period 2.
period_2_hooks_observed	character varying(5)	Total number of hooks observed during period 2.
period_2_hooks_baited_perc	character varying(3)	Percentage of hooks baited from a sample of 100 hooks observed during period 2.
period_3_start	character varying(4)	Start time of observation period 3.
period_3_end	character varying(4)	End time of observation period 3.
period_3_hooks_observed	character varying(5)	Total number of hooks observed during period 3.
period_3_hooks_baited_perc	character varying(3)	Percentage of hooks baited from a sample of 100 hooks observed during period 3.
gear_code	character varying(5)	Gear code for the line set, refers to code on BLL Gear form.
hooks_set	character varying(5)	Total number of hooks set.
strategy	character varying(2)	2-part code for strategy used during fishing. Code detail on back of setting form.
gear_discard_yn	character varying(1)	Gear was discarded during setting: Y = yes, or N = no.
entire_set_observed_yn	character varying(1)	Entire set observed during setting: Y = yes, or N = no.
vessel_speed	character varying(4)	Vessel speed (knots).
line_setting_height	character varying(4)	Line setting height (m).
line_length	character varying(5)	Length of line (m).
setting_path	character varying(2)	2-part code for path of vessel while setting. Code detail on back of setting form.
min_hook_depth	character varying(4)	Minimum hook distance from seabed (m).
max_hook_depth	character varying(4)	Maximum hook distance from seabed (m).
dist_stern_to_bait_min	character varying(2)	Minimum distance from stern to bait entry point (m).
dist_stern_to_bait_max	character varying(2)	Maximum distance from stern to bait entry point (m).
dist_bait_to_tori	character varying(2)	Lateral distance from bait entry point to tori line (m).
bait_prop_wash	character varying(1)	Whether bait lands inside vessels prop wash (Y/N/U).
bait_1_species	character varying(3)	3-char species code for bait 1 species.
bait_1_composition	character varying(3)	Percentage of total baited hooks comprising bait 1 species.
bait_1_state	character varying(1)	State of bait 1 species: F = Frozen, T = Thawed, S = Semi-thawed.
bait_2_species	character varying(3)	3-char species code for bait 2 species.
bait_2_composition	character varying(3)	Percentage of total baited hooks comprising bait 2 species.

bait_2_state	character varying(1)	State of bait 1 species: F = Frozen, T = Thawed, S = Semi-thawed.
bait_3_species	character varying(3)	3-char species code for bait 3 species.
bait_3_composition	character varying(3)	Percentage of total baited hooks comprising bait 3 species.
bait_3_state	character varying(1)	State of bait 1 species: F = Frozen, T = Thawed, S = Semi-thawed.
acoustic_bird_deterrent	character varying(1)	Whether acoustic bird deterrents were used at any time during the set (Y/N/U).
laser_deterrent	character varying(1)	Whether a Laser deterrent was used at any time during the set (Y/N/U).
deck_light	character varying(1)	Whether there was unnecessary deck lighting while setting (Y/N/U).
other_mitigation_yn	character varying(1)	Whether there were any other mitigation devices or strategies used. Describe in comments (Y/N).
discards_during_setting	character varying(1)	Any offal, bait or whole fish discarded during setting: C = Discarded continually, O = Discarded occasionally, B = Batch discarded once holding bin is full, R = Retained and discarded once setting was complete, N = No discarding.
tori_used	character varying(1)	Whether a tori line was deployed during setting (Y/N/U).
port_tori_gear_code	character varying(2)	Gear code of tori line attached on port side of vessel.
port_tori_problem_code	character varying(3)	Problem code for port side tori line. Code detail on back of setting form.
centre_tori_gear_code	character varying(2)	Gear code of tori line attached on centre of vessel.
centre_tori_problem_code	character varying(3)	Problem code for centre tori line. Code detail on back of setting form.
stbd_tori_gear_code	character varying(2)	Gear code of tori line attached on starboard side of vessel.
stbd_tori_problem_code	character varying(3)	Problem code for starboard side tori line. Code detail on back of setting form.
form_version	character(20)	Version of the Bottom longline setting form.
comments	character varying	Observer comments on line setting event.

Table z_boom_detail

Comment: Bird baffler boom details, Up to 4 positions from stern quarter of a vessel.

Column	Type	Null?	Description
baffler_boom_key	bigint	No	System generated key to identify the bird baffler boom.
baffler_key	bigint	No	System generated key to identify the bird baffler.
trip_number	integer	No	Trip number for an observed trip.
equipment_code	character(3)		letter B plus a number, each baffler measure during this trip numbered from 1 upwards.
boom_position	smallint	No	Boom position as: 1 = Port side, 2 = Port aft, 3 = Starboard side, 4 = Starboard aft.
boom_present	character(1)		Present or Absent. Boom details only completed if indicated that this boom was present.
boom_location	numeric(4,2)		Distance to the appropriate reference point. (Stern corner of vessel) Recorded in metres, rounded to the nearest 0.1m
boom_angle	smallint		Estimate of the angle of the boom from dead astern
inner_dropper	numeric(3,2)		Distance from the edge of the vessel to the innermost dropper.
outer_dropper	numeric(4,2)		Total distance from the edge of the vessel to the outermost dropper.
droppers_number	smallint		Number of droppers attached to the boom.
webbing_type	character(1)		Webbing Type connecting the droppers R = Rigid (for example lengths of pipe) F = Flexible (for example, rope) N = None (absent).
max_spacing	numeric(3,2)		Maximum dropper spacing (m).
line_length	numeric(4,2)		Average drop line in metres rounded to the nearest 0.1m.
object_length	numeric(4,2)		Average dropper object length
surface_gap	numeric(4,2)		Estimate of the average gap between the bottom of a dropper object and the sea surface.

material_types	character varying(10)	Dropper Material code or codes of all materials used to form the dropper lines and dropper object. B = buoy, F = inverted funnel or plastic cone, H = plastic hosing, S = plastic strapping, L = length of line, R = plastic rod, M = length of metal, T = plastic tubing, W = weight, V = no separate object (initial code, replaced by Z), Z = No separate object (code added later by Mar 2015), P = poly- pipe, O = other (describe in Additional Comments).
material_colours	character varying(10)	Colours on dropper, (except the main line). B = blue P = pink R = red C = carrot (orange) Y = yellow G = green F = faded colour (any) W = brown O = other (describe in Additional Comments).

Indexes:
  "pk_z_boom_detail" PRIMARY KEY, btree (baffler_boom_key)
  "indx_boom_space" btree (baffler_key)
  "indx_boom_trip" btree (trip_number)
Foreign-key constraints:
  "fk_z_boom_d_reference_z_bird_b" FOREIGN KEY (baffler_key)
   REFERENCES z_bird_baffler(baffler_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_ccamlr_biological

Comment: Biological Data from CCAMLR Excel longline logbook.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
set_number	smallint	No	Set number, starting from one, for all sets (observed and unobserved).
date_observed	date		Date of observation.
fish_number	integer	No	Fish id number
species	character(3)	No	Code to identify the species caught on the set.
otolithed	character(1)		Scale or Otolith or Both collected, values S, O or B.
total_length	integer		Total length of the fish in cm.
snout_anus_length	integer		Snout to anus length, from the tip of the snout to the anus in cm.
wingspan	integer		Wingspan (width for skates and rays) in cm.
weight	numeric(7,3)		Weight of the individual fish in kg.
sex	character(1)		Sex of fish.
gonad_stage	character(1)		Numeric code for stage of gonad maturity.
gonad_weight	character(8)		Gonad weight in grams.
stomach_fullness	character(1)		Stomach fullness code.
content_state	character(1)		Code for state of the stomach contents.
content_type	character(1)		Code for type of the stomach contents.
comment	character varying(240)		comment

Indexes:
  "pk_z_ccamlr_biological" PRIMARY KEY, btree (trip_number, set_number, fish_number, species)

Table z_ccamlr_catch

Comment: Catch data from CCAMLR Excel longline logbook.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
set_number	smallint	No	Set number, starting from one, for all sets (observed and unobserved).
species	character(3)	No	Code to identify the species caught.
greenweight_retained	numeric(6,2)		Green weight retained (kg).
gw_retain_code	character(1)		Estimation code for green weight retained. F = Factory/skipper estimation, O = Observer estimation, T = actual Tared weight, N = actual Number counted.
number_retained	integer		Number of fish retained.
number_retain_code	character(1)		Estimation code for number retained. F = Factory/skipper estimation, O = Observer estimation, T = actual Tared weight, N = actual Number counted.
greenweight_discarded	numeric(6,2)		Green weight discarded (kg).
gw_discarded_code	character(1)		Estimation code for green weight discarded. F = Factory/skipper estimation, O = Observer estimation, T = actual Tared weight, N = actual Number counted.
number_discarded	integer		Number of fish discarded.
number_discard_code	character(1)		Estimation code for number discarded. F = Factory/skipper estimation, O = Observer estimation, T = actual Tared weight, N = actual Number counted.
number_lost	integer		Number of fish lost.

Indexes:
  "pk_z_ccamlr_catch" PRIMARY KEY, btree (trip_number, set_number, species)
Foreign-key constraints:
  "fk_z_ccamlr_catch_reference" FOREIGN KEY (trip_number, set_number)
   REFERENCES z_ccamlr_haul(trip_number, set_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_ccamlr_haul

Comment: Daily hauling observations from CCAMLR Excel longline logbook.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
set_number	smallint	No	Set number, starting from one, for all sets (observed and unobserved).
date_observed	character(9)		Date of observation.
hooks_lost	integer		Estimated number of hooks lost.
hooks_observed	integer		The number of hooks observed.
interrupted	character(1)		Haul interrupted Yes or No
interruption_time	character(5)		Total interruption time (hours).
bird_device_yn	character(1)		Whether a bird scaring device was used, Y = Yes, N = No.
offal_dumped	character(1)		Offal dumped during hauling, Y = Yes, N = No.
start_date	date		Start date of the haul.
start_time	character(5)		Start time (24 hour format).
start_latitude	numeric(4,2)		Start position latitude (-dd.mm).
start_longitude	numeric(5,2)		Start position longitude (ddd.mm).
start_bottom_depth	integer		Depth of bottom at start of haul in metres.
end_date	date		End hauling date.
end_time	character(5)		End time (24 hour format).
end_latitude	numeric(5,1)		End hauling position latitude (-dd.mm).
end_longitude	numeric(6,1)		End position longitude (ddd.mm).
end_bottom_depth	character(8)		Depth of bottom at end of haul in metres.
obs1_start_date	date		Observation 1 start date.
obs1_start_time	character(5)		Observation 1 start time.
obs1_end_date	date		Observation 1 end date.
obs1_end_time	character(5)		Observation 1 end time.
obs2_start_date	date		Observation 2 start date.
obs2_start_time	character(5)		Observation 2 start time.
obs2_end_date	date		Observation 2 end date.
obs2_end_time	character(5)		Observation 2 end time.
obs3_start_date	date		Observation 3 start date.

obs3_start_time	character(5)	Observation 3 start time.
obs3_end_date	date	Observation 3 end date.
obs3_end_time	character(5)	Observation 3 end time.
wind_speed	smallint	Wind speed on the beaufort scale.
wind_direction	integer	Wind direction at time of observation in degrees (0 to 360).
sea_height	numeric(3,1)	Sea height (m).
sea_direction	integer	Sea direction (degrees).
swell_height	numeric(3,2)	Swell height (m).
swell_direction	smallint	Swell direction (degrees).
barometer_reading	integer	Barometer reading (mb).
barometer_trend	character(1)	Barometer trend, R = Rising, F = Falling, H = Holding.
cloud_cover	smallint	Cloud cover as fraction of 8.
air_temperature	numeric(3,1)	Air temperature in degrees Celcius.
sea_surface_temp	numeric(3,1)	Sea surface temperature (decimal degrees C).
daylight_period	character(3)	Daylight period. 1 = Night, 2 = Nautical dawn, 3 = Day, 4 = Nautical disk, 5 = Night.
moonlight	character(1)	Moonlight, 1 = No moon, 2 = <Half moon, 3 = Half moon, 4 = >Half moon, 5 = Full moon.
obs_for_bycatch	character(1)	Was haul observed for fish/invertebrate by-catch, Y = Yes, N = No.
percent_obs_bycatch	integer	Estimated percentage of the haul observed for by-catch (%).

Indexes:
"pk_z_ccamlr_haul" PRIMARY KEY, btree (trip_number, set_number)
Referenced by:
TABLE "z_ccamlr_catch" CONSTRAINT "fk_z_ccamlr_catch_reference" FOREIGN KEY (trip_number, set_number)
REFERENCES z_ccamlr_haul(trip_number, set_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_ccamlr_set

Comment: Daily setting observations from CCAMLR Excel longline logbook.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
set_number	smallint	No	Set number, starting from one, for all sets (observed and unobserved).
set_type	character(1)		Set Type: R = Research or C = Commercial
area_code	character(5)		3 or 4 character area code. Usually Fisheries Management Area codes, but also research codes where appropriate.
date_observed	date		Date of observation.
interrupted	character(1)		Set interrupted Yes or No
interruption_time	character(5)		Total interuption time (hours).
vessel_speed	numeric(3,1)		Vessel setting speed in knots.
sets_unobserved	smallint		Number of sets unobserved since last set
start_date	date		Start date of the set.
start_time	character(5)		Start time (24 hour format).
start_latitude	numeric(4,2)		Start position latitude (-dd.mm).
start_longitude	numeric(5,2)		Start position longitude (ddd.mm).
start_bottom_depth	integer		Depth of bottom at start of set in metres.
end_date	date		End setting date.
end_time	character(5)		End time (24 hour format).
end_latitude	numeric(4,2)		End setting position latitude (-dd.mm).
end_longitude	numeric(5,2)		End position longitude (ddd.mm).
end_bottom_depth	integer		Depth of bottom at end of set in metres.
obs1_start_date	date		Observation 1 start date.
obs1_start_time	character(5)		Observation 1 start time.
obs1_end_date	date		Observation 1 end date.
obs1_end_time	character(5)		Observation 1 end time.
obs2_start_date	date		Observation 2 start date.
obs2_start_time	character(5)		Observation 2 start time.
obs2_end_date	date		Observation 2 end date.
obs2_end_time	character(5)		Observation 2 end time.

obs3_start_date	date	Observation 3 start date.
obs3_start_time	character(5)	Observation 3 start time.
obs3_end_date	date	Observation 3 end date.
obs3_end_time	character(5)	Observation 3 end time.
alter1_time	character(5)	Alteration No. 1 Time (hh:mm).
alter1_course	integer	Alteration No. 1 course (degrees).
alter1_wind_dir	integer	Alteration No. 1 wind direction (degrees).
alter2_time	character(5)	Alteration No. 2 Time (hh:mm).
alter2_course	integer	Alteration No. 2 course (degrees).
alter2_wind_dir	integer	Alteration No. 2 wind direction (degrees).
alter3_time	character(5)	Alteration No. 3 Time (hh:mm).
alter3_course	integer	Alteration No. 3 course (degrees).
alter3_wind_dir	integer	Alteration No. 3 wind direction (degrees).
alter4_time	character(5)	Alteration No. 4 Time (hh:mm).
alter4_course	integer	Alteration No. 4 course (degrees).
alter4_wind_dir	integer	Alteration No. 4 wind direction (degrees).
line_length	bigint	Length of main line in metres.
hook_number	integer	Number of hooks set.
baskets_number	integer	Number of baskets or magazines set.
hooks_per_basket	integer	Number of hooks per basket or magazine.
percent_baited	integer	Percentage of hooks baited.
branches_distance	numeric(4,1)	Distance between branches (m).
bottom_distance	numeric(3,1)	Distance of hooks off bottom (m).
bait_species	character(15)	Species codes for baits used, eg separated by '/'.
bait_size	integer	Bait size.
bait_proportion	character(11)	Proportion of respective baits used, eg 70/30.
bait_temp	character(1)	Bait temperature status, T = Thawed, H = Half-frozen, F = Frozen.
deck_lights	character(3)	Deck lights on during setting (On, Off).
streamers_used	character(1)	Streamer lines used , Y = Yes, N = No.
streamer_number	integer	Number of streamer lines used.
offal_dumped	character(1)	Offal dumping during setting, Y = Yes, N = No.
bait_entry_posn	character(1)	Bait entry position, P = Port, S = Starboard, A = Stern.
wind_speed	smallint	Wind speed on the beaufort scale.

wind_direction	integer	Wind direction at time of observation in degrees (0 to 360).
sea_height	numeric(3,1)	Sea height (m).
sea_direction	integer	Sea direction (degrees).
swell_height	numeric(3,2)	Swell height (m).
swell_direction	smallint	Swell direction (degrees).
barometer_reading	integer	Barometer reading (mb).
barometer_trend	character(1)	Barometer trend, R = Rising, F = Falling, H = Holding.
cloud_cover	smallint	Cloud cover as fraction of 8.
air_temperature	numeric(3,1)	Air temperature in degrees Celsius.
surface_temperature	numeric(3,1)	Sea surface temperature (decimal degrees C).
visibility_index	character(1)	Visibility index, 1 = < 50 m, 2 = 50 m - 1 km, 3 = > 1 km.
daylight_period	character(3)	Daylight period. 1 = Night, 2 = Nautical dawn, 3 = Day, 4 = Nautical disk, 5 = Night.
moonlight	character(1)	Moonlight, 1 = No moon, 2 = <Half moon, 3 = Half moon, 4 = >Half moon, 5 = Full moon.

Indexes:
  "pk_z_ccamlr_set" PRIMARY KEY, btree (trip_number, set_number)

Table z_cnv_conv_factor_comm

Comment: Scientific Observer Programme conversion factor form comments.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
processed_state_code	character varying(4)	No	Code to identify the state to which the fish has been processed to.
fma_code	character varying(7)	No	Code identifying the Fisheries Management Area where the sample was taken.
comments	character varying(3000)	No	Comment about the conversion factor record.
species	character(3)	No	Species Code about which the comment is loaded for the Conversion Factor.

Indexes:
"new_conv_factors_comm_trip_indx" btree (trip_number)

Table z_cnv_conversion_factor

Comment: Details of conversion factor data collected by the SOP.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
observer_code	character(4)		4 character observer code. Used on ASO CF data.
tow_number	integer	No	Sequential identifier for each tow.
species	character(3)	No	Species code for the species tested.
processed_state_code	character varying(3)		Code to identify the state to which the fish has been processed to.
proc_state_original_code	character varying(4)		Original processed state as stored in the conversion_factor table.
fma_code	character varying(4)		Code identifying the Fisheries Management Area where the sample was taken.
min_length	numeric(5,1)		Minimum length of fish in sample in centimetres.
max_length	numeric(5,1)		Maximum length of fish in sample in centimetres.
min_tail_cut	numeric(4,1)		Minimum tail cut of fish in the sample (mm).
mean_tail_cut	numeric(6,2)		Median tail cut from what appears to be the average 2 or 3 tail cuts of fish in the sample (mm).
max_tail_cut	numeric(4,1)		Maximum tail cut of fish in the sample (mm).
number_of_fish	integer		Number of fish in this test.
greenweight	numeric(11,3)		Greenweight of the fish used to calculate the conversion factor in kilograms.
stomach_gonad_weight	numeric(11,3)		The weight of stomach and gonads if significant (kg).
processed_units_number	integer		Number of processed units in the sample.
non_compliant_cuts_total	integer		Total number of fish with non-compliant cuts.
non_compliant_undercuts	integer		Number of fish with non-compliant undercuts.
non_compliant_overcuts	integer		Number of fish with non-compliant overcuts.
non_compliant_head_cuts	integer		Number of fish with non-compliant head cuts.
non_compliant_tail_cuts	integer		Number of fish with non-compliant tail cuts.
non_compliant_head_tail_cuts	integer		Number of fish with non-compliant head and tail cuts.
post_machine_weight	numeric(11,3)		Weight post machine - Baader/ Trio machine in kilograms.
processed_weight	numeric(11,3)		Weight (kg) of the fish after processing.
trimming_weight	numeric(11,3)		Trimming weight in kilograms.
processing_equipment_code	character varying(4)		Code to identify the processing equipment used: 1 hand (cut with knife), 2 machine (see machine_type).

machine_type_name	character varying(50)	Brand name of heading & gutting or filleting machine used.
conversion_factor	numeric(7,4)	Calculated conversion factor as a result of calculation greenweight/ processed weight.
scales_used_gw_code	character varying(4)	Code to identify the type of scales used for green weight. Values: 1 = electronic, 2 = flatbed, 3 = hanging, 4 = other.
scales_used_pw_code	character varying(4)	Code to identify the type of scales used for processed weight. Values: 1 = electronic, 2 = flatbed, 3 = hanging, 4 = other.
valid_test_yn	character(1)	Whether the test is considered valid (Yes or No).
test_type	character varying(3)	Type of test - R Random or NR Non Random.
sex_sampled	integer	Sex where single fish sampled e.g. tuna. 1 = male, 2 = female, 3 = unsexed.
comments	character varying(3000)	

Indexes:
  "new_conversion_factors_species_indx" btree (species)
  "new_conversion_factors_tow_indx" btree (tow_number)
  "new_conversion_factors_trip_indx" btree (trip_number)

Table z_cnv_surimi_conversion_factor

Comment: Details of Surimi conversion factor data, collected by the SOP.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
row_type	character varying(16)		Identifies each of 4 line types on a page; 'CF test', 'CF Page' is combined CF data of one page, 'Page Total' is the page total, 'Trip Total' is the trip to date total.
page_number	integer	No	A page number allocated by the system for each surimi CF data form.
species	character(3)		Species Code for the species tested.
test_date	character varying(32)		Date or date range for the test.
number_of_tows	integer		The number of tows included in the CF test.
tow_numbers	character varying(16)		The range of tows for the CF test.
greenweight	numeric(11,3)		Greenweight of the fish used to for Surimi in kilograms.
product_weight	numeric(11,3)		Weight (kg) of the fish after processing into Surimi.
conversion_factor	numeric(7,4)		Calculated conversion factor as a result of greenweight/ product weight.
comments	character varying(3000)		Comments relating to this test.

Indexes:
  "surimi_conversion_factors_species_indx" btree (species)
  "surimi_conversion_factors_trip_indx" btree (trip_number)

Table z_ctn_catch

Comment: Catch data from csv file for some Inshore Interaction trips.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by observer programme.
voyage_number	character varying(8)		Voyage number associated with the fishing catch event.
station_number	character varying(8)		Station number associated with the fishing catch event
target_species	character varying(8)		Species targeted in the fishing event.
species	character varying(8)		3 character code for greenweight species.
end_status	character varying(8)		3 character code denoting end state or destination of processed species records.
greenweight	integer		Green weight of the species caught, in kilograms.
method_analysis1	character varying(8)		First part of weight analysis code, determining location of analysis
method_analysis2	character varying(8)		Second part of weight analysis code, determining method used to assess species greenweight.
comments	character varying		Comments relating to species catch records.

Table z_ctn_catch_20190717

Comment: Catch data from csv file for some Inshore Interaction trips.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by observer programme.
voyage_number	character varying(8)		Voyage number associated with the fishing catch event.
station_number	character varying(8)		Station number associated with the fishing catch event
target_species	character varying(8)		Species targeted in the fishing event.
species	character varying(8)		3 character code for greenweight species.
greenweight	integer		Green weight of the species caught, in kilograms.
method_analysis1	character varying(8)		First part of weight analysis code, determining location of analysis
method_analysis2	character varying(8)		Second part of weight analysis code, determining method used to assess species greenweight.
comments	character varying		Comments relating to species catch records.

Table z_ctn_fishing

Comment: Fishing event data from Inshore interactions (formerly cetacean) trips.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
start_voyage_number	integer		Starting voyage number associated with the fishing event.
end_voyage_number	integer		Ending voyage number associated with the fishing event.
station_number	integer		Fishing event number or station number. Generated by NIWA for initial trips, then exported from Nomad and supplied by MFish.
target_species	character(3)		Species code for the species being targeted.
fishing_method	character varying(20)		Fishing method, eg "Bottom Trawl".
form_number	character varying(20)		3 letter code depicting the type of return the fisher is using, options are CEL, LTC, TCE or NCE followed by the form number.
effort	integer		An effort measure that varies according to fishing method: Wingspread for trawl, hook numbers for longline or troll, total net length for set net, or number of pots the vessels expecting to check that day for potting.
mitigation	character varying(20)		A distinct list of mitigation techniques: Baffler, Tori, Cannon, Pingers, Warp scarer, Offal management, Dyed baits, Sticker removal, Other or None.
missed_event_flag	character(1)		Did the observer miss viewing this event or not?
start_bottom_depth	integer		Depth (metres) to the bottom (from either the net or the vessel) at the start of the tow.
end_bottom_depth	integer		Depth (metres) to the bottom (from either the net or the vessel) at the end of the tow.
topography_code	character(1)		Numeric code to describe the bottom contour.
bait1_species	character(3)		Species code for the principal bait species used.
bait2_species	character(3)		Species code for the 2nd most relevant bait species used.
hooks_observed	integer		The number of hooks observed.
hooks_baited_percentage	integer		The percentage of hooks that were baited.
hooks_lost_number	integer		The number of hooks lost.
length_frequency_taken	character(1)		Whether Length Frequency was done on fish from this set? Y = Yes, N = No.
event_start_datetime	character varying(25)		The date and time at the start of the event, when the vessel first begins to put pieces of fishing equipment in the water.

event_start_lat	character varying(9)	The starting latitude position of the fishing events deployment of fishing gear into the water.
event_start_nth_sth	character(1)	The fishing events starting position latitude hemisphere (N or S).
event_start_long	character varying(10)	The starting longitude position of the fishing events deployment of fishing gear into the water.
event_start_est_wst	character(1)	The fishing events starting position longitude hemisphere (E or W).
event_start_pdop	numeric(2,1)	The fishing events starting measurement of accuracy of the GPS position based on the number of satellites and the geometry of satellite position.
fish_start_datetime	character varying(25)	The starting date and time of fishing i.e. at end of deployment of fishing gear, for trawling occurs after target depth is reached.
fish_start_lat	character varying(9)	The starting latitude of the fishing event at end of deployment of fishing gear or after target depth is reached - for trawling.
fish_start_nth_sth	character(1)	The starting latitude hemisphere of the fishing event at end of deployment (N or S).
fish_start_long	character varying(10)	The starting longitude of the fishing event at end of deployment (E or W).
fish_start_est_wst	character(1)	The starting longitude hemisphere of the fishing event at end of deployment (E or W).
fish_start_pdop	numeric(2,1)	The fishing events starting measurement of accuracy of the GPS position based on the number of satellites and the geometry of satellite position.
fish_end_datetime	character varying(25)	The ending date and time of fishing, when target depth is left for trawling, when troll lines pulled, when first longline hook hauled or first piece of net is hauled.
fish_end_lat	character varying(9)	The ending latitude of the fishing event at end of deployment.
fish_end_nth_sth	character(1)	The ending latitude hemisphere of the fishing event at end of deployment (S or N).
fish_end_long	character varying(10)	The ending longitude of the fishing event at end of deployment.
fish_end_est_wst	character(1)	The ending longitude hemisphere of the fishing event at end of deployment (E or W).
fish_end_pdop	numeric(2,1)	The fishing events ending measurement of accuracy of the GPS position based on the number of satellites and the geometry of satellite position.
event_end_datetime	character varying(25)	The date and time at the end of the fishing event, when all the fishing gear ie nets or hooks are removed from the water.
event_end_lat	character varying(9)	The ending position latitude of the fishing event, ie withdrawl of fishing gear out of the water .

event_end_nth_sth	character(1)	The fishing events end position latitude hemisphere (N or S).
event_end_long	character varying(10)	The ending position longitude of the fishing event, ie withdrawl of fishing gear out of the water.
event_end_est_wst	character(1)	The fishing events ending position longitude hemisphere (E or W).
event_end_pdop	numeric(2,1)	The fishing events ending measurement of accuracy of the GPS position based on the number of satellites and the geometry of satellite position.

Table z_ctn_incident

Comment: Inshore interactions (formerly cetacean) incident data, eg non-fish by catch captures and other notable incidents.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
voyage_number	integer	No	Number assigned to voyage within a trip.
incident_type	character varying(40)		Description of the cetacean incident.
date_time	character varying(25)		Date and time of the incident sighting.
lat	character varying(9)		Vessel latitude in degrees and minutes (format DDMM.mmmm).
nth_sth	character(1)		Latitude hemisphere North or South (N or S).
long	character varying(10)		Vessel longitude in degrees and minutes (format DDDMM.mmmm).
est_wst	character(1)		Longitude meridian East or West (E or W).
pdop	numeric(2,1)		The Position Dilution of Precision for the GPS position. A measure of the geometrical strength of the GPS satellite configuration. The smaller the number the better the accuracy.
photo	character(1)		Was a photo taken of the incident?
comment	character(1)		Is there a comment regarding the incident?
report	character(1)		Is there a report regarding the incident?
incident_number	integer	No	Number assigned to the incident.

Indexes:
"pk_z_ctn_incident" PRIMARY KEY, btree (trip_number, voyage_number, incident_number)

Table z_ctn_processed

Comment: Catch processing data from csv file for some Inshore Interaction trips.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by observer programme.
voyage_number	character varying(8)		Voyage number associated with the fishing catch event.
station_number	character varying(8)		Station number associated with the fishing catch event
species	character varying(8)		3 character code for processed species.
end_status	character varying(8)		3 character code denoting end state or destination of processed species records.
greenweight	integer		Green weight of the species being processed, in kilograms.
method_analysis1	character varying(8)		First part of weight analysis code, determining location of analysis
method_analysis2	character varying(8)		Second part of weight analysis code, determining method used to assess species processed weight.
comments	character varying		Comments relating to processed catch records.

Table z_ctn_processed_20190717

Comment: Catch processing data from csv file for some Inshore Interaction trips.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by observer programme.
voyage_number	character varying(8)		Voyage number associated with the fishing catch event.
station_number	character varying(8)		Station number associated with the fishing catch event
species	character varying(8)		3 character code for processed species.
end_status	character varying(8)		3 character code denoting end state or destination of processed species records.
greenweight	integer		Green weight of the species being processed, in kilograms.
method_analysis1	character varying(8)		First part of weight analysis code, determining location of analysis
method_analysis2	character varying(8)		Second part of weight analysis code, determining method used to assess species processed weight.
comments	character varying		Comments relating to processed catch records.

Table z_ctn_sighting

Comment: Sightings data from Inshore interactions (formerly Cetacean) trips.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the Observer Programme.
voyage_number	integer	No	Number assigned to voyage within a trip.
species	character(3)		3 character species code of the animal sighted.
group_pod	smallint		An identifier for each distinct group of protected species sighted within a trip.
sequence_number	integer		Records information about each particular "group pod" through time.
parent_pod	smallint		Used when a particular group splits into 2 different groups exhibiting different behaviours.
adult_count	integer		The number of adults in the sighting.
young_count	smallint		The number of young in the sighting.
activity	character varying(60)		A description of what the animal was doing (a specified list of values).
photo_date_time	character varying(25)		The date and time that a photo was taken of the sighting.
image_filename	character varying(256)		Filename(s) of photo(s) related to the sighting.
date_time	character varying(25)		Date and time of the activity sighting.
lat	character varying(9)		Latitude of the sighting (format DDMM.mmmm).
nth_sth	character(1)		Latitude hemisphere North or South (N or S).
long	character varying(10)		Longitude of the sighting (format DDDMM.mmmm).
est_wst	character(1)		Longitude meridian East or West (E or W).
pdop	numeric(2,1)		Position Dilution of Precision for the GPS position. A measure of the geometrical strength of the GPS satellite configuration. The smaller the number the better the accuracy.
fishing_event_number	integer		Fishing event number or station number of active fishing event if applicable.
observer_status	character varying(20)		Either where physically the observer was on station or whether they were "off duty".
sighting_type	character varying(12)		Whether the sighting was random or non-random (i.e. as part of the sighting observation period).
commercial_vessels_visible	character varying(4)		A count of visible commercial fishing vessels.
other_vessels_visible	character varying(4)		A count of recreational and commercial non-fishing vessels.
visibility	character(1)		A measure of visibility: 1 - fog, 2 - poor, 3 - fair, 4 - good.

fishing_gear_interaction	character varying(10)	Proportion of animals interacting with fishing gear: None, Some or All.
fish_waste_discarded	character(1)	Whether fish waste was discarded during the observation period. (Y/N)

Table z_ctn_status

Comment: Inshore interactions (formerly cetacean) status data, including if observer was on shift and sea state.

Column	Type	Null?	Description
trip_number	integer		Trip number for an observed trip.
voyage_number	integer	No	Number assigned to voyage within a trip.
sighting_count	integer		A summary of how many group pods were visible.
fishing_event_count	integer		A summary of how many fishing events were active at that time.
observer_status	character varying(20)		Either where physically the observer was on station or whether they were "off shift".
sea_state_beaufort	smallint		Sea state coded on the Beaufort scale.
comm_vessels_visible	integer		A count of visible commercial fishing vessels.
oth_vessels_visible	integer		A count of recreational and commercial non fishing vessels.
date_time	character varying(25)		The date and time of the status record.
lat	character varying(9)		Vessel latitude in degrees and minutes (format DDMM.mmmm).
nth_sth	character(1)		Latitude hemisphere North or South (N or S).
long	character varying(10)		Vessel longitude in degrees and minutes (format DDDMM.mmmm).
est_wst	character(1)		Longitude meridian East or West (E or W).
pdop	numeric(2,1)		The Position Dilution of Precision for the GPS position. A measure of the geometrical strength of the GPS satellite configuration. The smaller the number the better the accuracy.

Table z_ctn_voyage

Comment: Voyage data from Inshore interactions (formerly cetacean) observations for a trip.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
vessel_id	character varying(7)		Identification for a vessel, typically registration number.
vessel_name	character varying(50)		The name of the vessel.
captain	character varying(40)		Name of Captain associated with trip/voyage.
observer	character varying(50)		Full Name of the observer in <First Name> <Last Name> format up to trip 2792. Then from trip 2833, a 4 character unique observer code, usually the first initial followed by the first 3 letters of observers surname.
voyage_number	integer	No	Number assigned to voyage within a trip.
start_date_time	character varying(25)		Date and time at start of the voyage.
start_lat	character varying(9)		Start position latitude in degrees and minutes (DDMM.mmmm format).
start_nth_sth	character(1)		Start position latitude north or south of the equator (N or S).
start_long	character varying(10)		Start position longitude in degrees and minutes (DDDMM.mmmm format).
start_est_wst	character(1)		Start position meridian, E or W.
start_pdop	numeric(2,1)		Position Dilution of Precision for start position. PDOP gives a measure of the geometrical strength of the GPS satellite configuration. Less than 4 gives the best accuracy (under 1 meter). Between 4 and 8 gives acceptable accuracy. Greater than 8 gives poor accuracy.
end_date_time	character varying(25)		Date and time at the end of the voyage.
end_lat	character varying(9)		End position latitude in degrees and minutes (DDMM.mmmm format).
end_nth_sth	character(1)		End position latitude north or south of the equator (N or S).
end_long	character varying(10)		End position longitude in degrees and minutes (DDDMM.mmmm format).
end_est_wst	character(1)		End position meridian, E or W.
end_pdop	numeric(2,1)		Position Dilution of Position for the end position. PDOP gives a measure of the geometrical strength of the GPS satellite configuration. Less than 4 gives the best accuracy (under 1 meter). Between 4 and 8 gives acceptable accuracy. Greater than 8 gives poor accuracy.

Table z_historic_coral

Comment:

Column	Type	Null?	Description
vessel_name	character varying(112)		
trip_number	integer		
station_number	integer		
sample	character varying(112)		
start_date	date		
start_latitude	character varying(112)		
start_longitude	character varying(112)		
start_seabed_depth	character varying(112)		
end_date	character varying(112)		
end_latitude	character varying(112)		
end_longitude	character varying(112)		
end_seabed_depth	character varying(112)		
mfish_code_tracey	character varying(112)		
sanchez_tracey_code	character varying(112)		
sanchez_tracey	character varying(112)		
genus	character varying(112)		
species	character varying(112)		
authority	character varying(112)		
phylum	character varying(112)		
class	character varying(112)		
sp_order	character varying(112)		
family	character varying(112)		
reference	character varying(512)		
number_of_specimens	character varying(64)		
close_associations	character varying(112)		
comments	character varying(512)		
image	character varying(112)		

Indexes:

"ndz_historic_coral_stn" btree (station_number)
"ndz_historic_coral_trip" btree (trip_number)
"ndz_historic_non_coral_stn" btree (station_number)
"ndz_historic_non_coral_trip" btree (trip_number)

Table z_historic_non_coral

Comment:

Column	Type	Null?	Description
vessel_name	character varying(32)		
trip_number	integer		
station_number	integer		
sample	character varying(128)		
start_date	date		
start_latitude	character varying(128)		
start_longitude	character varying(128)		
start_seabed_depth	character varying(128)		
end_date	character varying(128)		
end_latitude	character varying(128)		
end_longitude	character varying(128)		
end_seabed_depth	character varying(128)		
mfish_code	character varying(128)		
genus	character varying(128)		
species	character varying(128)		
authority	character varying(128)		
phylum	character varying(128)		
class	character varying(128)		
sp_order	character varying(128)		
family	character varying(128)		
reference	character varying(256)		
number_of_specimens	character varying(64)		
close_associations	character varying(128)		
comments	character varying(512)		
image	character varying(128)		

Table z_invertebrate_samples

Comment: NIWA invertebrate identification data for SOP samples, from project DAE201001 and subsequent iterations.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
station_number	integer		A sequential identifier for each fishing event, eg a tow or set.
nic_number	character varying(10)	No	NIWA Invertebrate Collection number.
osd_no	character varying(24)		Observer Samples Database number.
obs_species	character varying(16)		Species code or occasionally codes or name as recorded by the observer.
species_code	character(3)		Best available species code assigned based on taxonomic identification by the determiner.
phylum	character varying(32)		Taxonomic phylum the sample has been identified to.
class_name	character varying(40)		Taxonomic class the sample has been identified to.
order_name	character varying(40)		Taxonomic order the sample has been identified to.
family_name	character varying(40)		Taxonomic family the sample has been identified to.
genus_name	character varying(40)		Taxonomic genus the sample has been identified to.
species_name	character varying(40)		Taxonomic species the sample has been identified to.
taxon_name	character varying(64)		The name of the taxon from this identification.
determiner	character varying(32)		Name of the person who determined this identification of the taxa.
determined_date	character varying(32)		Date when this identification was made.
sample_wt	integer		Weight of sample in grams.
sample_count	integer		The number of specimens in the sample.
collected_date	date		Date the sample was collected by the observer.
loaded_date	date		Date a data set has been inserted, e.g. 30 June 2013 for DAE201001B.
remarks	text		
mpi_sample_number	character varying(24)		Sample number as provided by the MPI observer

Indexes:
"ndx_z_invertebrate_samples_stn_no" btree (station_number)
"ndx_z_invertebrate_samples_trip_no" btree (trip_number)

Table z_jig_specs

Comment: This table contains data relating to technical specifications of squid jiggers. Data were recorded from fishing licence applications - complete data n/a after 8788 (foreign chartered and domestic only).

Column	Type	Null?	Description
fishing_yr	character varying(7)		Fishing year, eg. 1987/88 (= Oct 1987 to Sep 1988).
nation	character varying(6)		Nationality of vessel,eg. JAPAN (= Japan licensed).
call_sign	character varying(6)	No	Vessel call sign
reg_length	numeric(5,2)		Registered length of vessel (metres to 2 decimals).
gross_tonnes	numeric(5,2)		Gross weight (tonnes to 2 decimals).
speed_s	numeric(3,1)		Service or normal speed (knots to 1 decimal).
speed_m	numeric(3,1)		Maximum speed (knots to 1 decimal).
duration	integer		Maximum duration at sea (days).
gen1	smallint		Number of generators of attribute "kva1" power.
kva1	integer		Power of attribute "gen1" generators (kva).
gen2	smallint		Number of generators of attribute "kva2" power.
kva2	integer		Power of attribute "gen2" generators (kva).
gen3	smallint		Number of generators of attribute "kva3" power.
kva3	integer		Power of attribute "gen3" generators (kva).
gen4	smallint		Number of generators of attribute "kva4" power.
kva4	integer		Power of attribute "gen4" generators (kva).
hold_cap	integer		Total fish hold capacity (tonnes).
freezer	smallint		Capacity of quick or blast freezers (tonnes/day).
jigs_h	smallint		Number of hand jig machines.
jigs_m	smallint		Number of automatic jig machines.
lures	smallint		Number of lures per line.
dist_l	numeric(2,1)		Distance between lures (metres).
light1	integer		Number of lights of attribute "w1" wattage.
watts1	integer		Power of attribute "light1" lights (watts).
light2	integer		Number of lights of attribute "w2" wattage.
watts2	integer		Power of attribute "light2" lights (watts).
light3	integer		Number of lights of attribute "w3" wattage.

watts3	integer	Power of attribute "light3" lights (watts).
light4	integer	Number of lights of attribute "w4" wattage.
watts4	integer	Power of attribute "light4" lights (watts).

Indexes:
  "ui_z_jig_specs_fyr_call_sign" UNIQUE, btree (fishing_yr, call_sign)
  "ndx_z_jig_specs_call_sig" btree (call_sign)
  "ndx_z_jig_specs_fyr" btree (fishing_yr)

Table z_lfs_catch
Comment: Catch data per station, for methods other than trawl including BLL, PS.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
station_number	integer	No	Sequential identifier for each station (tow or set).
species	character(3)	No	Code to identify the species caught on the set.
discard_status_code	character varying(4)		Code to identify the discard status.
catch_weight_method_code	character varying(4)		Code to identify the method of identifying catch weight at sea.
number_of_fish	integer		Number of fish of this species in the catch.
catch_weight	numeric(11,3)		The weight for the species caught in kilograms.
hold_number	character(3)		Hold number catch stored in.

Table z_lfs_fish_biological
Comment: Biological data for individual squid & fish specimens sampled by observers.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
tow_number	integer	No	Sequential identifier for each tow.
species	character(3)	No	Species Code for the squid being sampled.
fish_number	integer	No	Sequential identifying number of an individual fish.
copulated_code	integer		Code to identify whether the Female copulated\r Values 0=not copulated and 1=copulated.
fish_sex_code	integer		Code to Identify the sex of a fish e.g.\r 0=unsexed, 1=male, 2=female, 3=unknown (unable to determine).
dorsal_mantle_length_cm	integer		Dorsal mantle length (DML) in cm.

Indexes:
"pk_z_lfs_fish_biological_squ" PRIMARY KEY, btree (trip_number, tow_number, species, fish_number)

Table z_lfs_general_catch_sample

Comment: Catch data by tow for all species used for sampling.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
tow_number	integer	No	Sequential identifier for each tow.
species	character(3)	No	Species code for a species sampled on the tow.
sample_weight	numeric(11,3)		Weight (kg) of the sample taken from the whole catch of the tow.
sample_weight_method_code	integer		Code for the method of obtaining the sample weight. Codes were changed sometime between 2002 and 2009. Up to at least 2002: 1 = Salter scales, 2 = SeaWay scales, 3 = Platform Scales, 4 = Accurate electronic scales (vessels), 99 = Other weighing method or weight estimated.
catch_weight	numeric(11,3)		Weight (kg) of the catch of the species from the tow.
catch_weight_method_code	character(4)		Up to 3 character code for the method of obtaining catch weights at sea.
male_length_wgt_parm_code	integer		Unique integer code for the male length/weight regression parameters.
female_length_wgt_parm_code	integer		Unique integer code for the female length/weight regression parameters.
species_length_wgt_parm_code	integer		Unique integer code for the species length/weight regression parameters.
date_caught	character varying(16)		Date caught, for trolling data.
grade	character varying(8)		Grade where sample taken on graded fish. Scampi; 1..5, A,B(tails) & Jumbo.
comments	character varying		

Indexes:

"ndx_z_lfs_general_catch_sample" btree (trip_number, tow_number, species)

Table z_lfs_length_frequency

Comment: Length frequency data for a length class for any one species.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
tow_number	integer		Sequential identifier for each tow.
species	character(3)	No	Species code for the species being sampled on the tow.
length	integer	No	Length class for the length frequency (lowest whole centimetre).
length_measure_code	character(4)		1 character code for the method of measuring length.
male_number	integer		Frequency of males in the length class.
female_number	integer		Frequency of females in the length class.
female_stage1	integer		Frequency of the female stage one gonads.
female_stage2	integer		Frequency of the female stage two gonads.
female_stage3	integer		Frequency of the female stage three gonads.
female_stage4	integer		Frequency of the female stage four gonads.
female_stage5	integer		Frequency of the female stage five gonads.
male_stage1	integer		Frequency of the male stage one gonads.
male_stage2	integer		Frequency of the male stage two gonads.

male_stage3	integer	Frequency of the male stage three gonads.
male_stage4	integer	Frequency of the male stage four gonads.
male_stage5	integer	Frequency of the male stage five gonads.
total_fish	integer	Frequency of all fish in the length class, including unsexed fish.
lf_key	integer	No default nextval('z_lfs_length_frequency_lf_key_seq'::regclass)
selection_method	character(1)	Sample selection method code. 5 = simple random sample, 9 = whole catch. This column added to the database on 11Sep2017.

Indexes:
"pk_z_lfs_length_frequency" PRIMARY KEY, btree (lf_key)

Table z_lfs_purseseine

Comment: Details from Observer Programme Purse Seine Catch Effort and vessel activity log.

Column	Type	Null?	Description
trip_number	integer	No	Trip identification number issued by the observer group.
station_number	integer	No	A sequential number for each station of an observer trip.
set_number	integer		A sequential number for each set of a purse seine trip.
trip_day	integer		Trip days since the observer joined the vessel.
activity	character(4)		Code for vessel activity.
beaufort	smallint		Beaufort scale.
sea_temperature	numeric(3,1)		Sea surface temperature, degrees Celsius.
school_association	character(2)		Target school association with code eg A9 if saw birds feeding on the target school.
school_detected	character(2)		Code for who initially detected the target school, e.g. 1 = vessel, 2 = aircraft, etc.
aircraft_callsign	character(6)		Spotter aircraft call sign.
begin_purse	integer		Time begin pursing (winch on).
end_purse	integer		Time end pursing (rings up).
net_rolling	integer		Time net rolling started.
net_sacking	integer		Time net sacking began.
begin_brail	integer		Time begin brailing.
end_brail	integer		Time end brailing.
total_gw_surface	integer		Total greenweight at surface kg.
total_gw_surface_method	character(3)		Total greenweight at surface assessment method.
total_gw_onboard	integer		Total greenweight onboard kg.
total_gw_onboard_method	character(3)		Total greenweight onboard assessment method.
result_code	character(1)		Result of set code, e.g. 1 = Entire school caught, 2 = Some caught / some lost, 3 = Entire school lost, etc.
brail_code	character(1)		Brail type code, P = suction pump, S = scoop, O = other.
total_losses	integer		Amount of loss of any (potential) catch during setting, kg.
loss_method	character(3)		Method code for determining amount of total losses.
loss_code	character(1)		Loss code that describes how loss occurred.

loss_stage	character(2)	Event stage code indicating the stage of the fishing event when the catch loss occurred, e.g. SS = Start of Set, DP = During Pursing, etc .
loss_time	integer	Time (NZST) that the primary catch loss occurred.
mdbd_yn	character(1)	Sampling MDBD this set Y/N.
lf_yn	character(1)	Sampling LF this set Y/N.
birds_obs	character(1)	Bird observations this set Y/N.
nfb_yn	character(1)	Sampling NFB this set Y/N.
mammal	smallint	Number of marine mammals captured in the tow.
seabird	smallint	Number of seabirds captured in the tow.
turtle	smallint	Number of turtles captured.
time_codes	character(9)	Time codes used for times for start of set, begin pursing, end pursing, net rolling, net sacking, begin brailing, end brailing and end of set. 1 = someone on watch (vessel), 2 = observer.
celr_no	integer	CELR No for this set.
port	character(12)	Port where berthed.
comments	character varying(200)	Comments from activity log.
comment_ce	character varying(380)	Comments from Catch Effort form.

Table z_lfs_station

Comment: Station details common to trawls (up to 30-Sep-07 & those sampled), and other methods e.g. longline sets, including date, position and depth of the tow or set.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
station_number	integer	No	Sequential identifier for each station (tow).
start_date	date		Start date of the tow or set.
target_species	character(3)		Species Code for the species being targeted.
start_time	integer		Start time (24 hour format).
start_latitude	numeric(5,1)		Start position latitude (DDMM.m).
start_longitude	numeric(6,1)		Start position longitude (DDDMM.m).
start_east_west	character(1)		Start position meridian, E or W.
start_bottom_depth	integer		Depth (metres) to the bottom (from either the net or the vessel) at the start of the tow.
end_bottom_depth	integer		Depth (metres) to the bottom (from either the net or the vessel) at the end of the tow.
end_date	date		Finish date of the tow or set.
end_time	integer		End time (24 hour format).
end_latitude	numeric(5,1)		End position latitude (DDMM.m).
end_longitude	numeric(6,1)		End position longitude (DDDMM.m).
end_east_west	character(1)		End position meridian, E or W.
fishing_method	character(3)		3 character fishing method code.
area	character(5)		3 or 4 character area code. Usually Fisheries Management Area codes, but also research codes where appropriate.

Indexes:
"pk_z_lfs_station" PRIMARY KEY, btree (trip_number, station_number)
Referenced by:
TABLE "z_bll_line" CONSTRAINT "fk_z_bll_line__z_lfs_station" FOREIGN KEY (trip_number, station_number)
REFERENCES z_lfs_station(trip_number, station_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_lfs_trawl

Comment: Details of the tows for each trip for which length frequency data were collected, that only relate to trawl.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
station_number	integer	No	Sequential identifier for each station (tow).
gear_code	character varying(5)		Up to 5 character code for the type of fishing gear used for the tow.
start_net_depth	integer		Depth of the trawl net at the start of the tow in metres.
vessel_speed	numeric(7,3)		Mean speed of the vessel during the tow in knots.
end_net_depth	integer		Depth of the trawl net at the end of the tow in metres.
surface_temperature	numeric(3,1)		Sea surface temperature (decimal degrees C).
headline_temperature	numeric(3,1)		Sea temperature at headline (degrees Celsius).
headline_height	numeric(4,1)		Headline height (m) of the fishing gear during the tow.

Indexes:
"pk_z_lfs_trawl" PRIMARY KEY, btree (trip_number, station_number)

Table z_mdbd_biological

Comment: Data from Middle Depth Biological Data forms.

Column	Type	Null?	Description
mdbd_key	numeric(9,0)	No	Key for MDBD biological record.
trip_number	integer	No	MPI Observer trip number.
station_number	integer		Station number.
species	character(3)	No	Species code sampled.
fish_number	integer		Fish id number.
length1	numeric(6,2)		First length measurement (cm).
measure_method_1	character(1)		Measurement method for length1.
length2	numeric(6,2)		Second length measurement (cm).
measure_method_2	character(1)		Measurement method for length2.
sex	character(1)		Sex code of the fish.
stage	character varying(2)		Gonad stage or SCI egg stage.
oto_shell	character(1)		Otolith taken or shell soft or hard for SCI.
weight_method	character(2)		Method to weigh fish sample or fish.
weight	numeric(7,3)		Sample weight or weight of the individual fish in kg.
date_caught	character varying(16)		Date caught, for trolling data.
grade	character varying(8)		Grade where sample taken on graded fish. Scampi; 1..5, A,B(tails) & Jumbo.

Indexes:
  "pk_z_mdbd_biological" PRIMARY KEY, btree (mdbd_key)

Table z_mitigation_description

Comment: Descriptions of mitigation devices.

Column	Type	Null?	Description
mi_key	integer	No	System generated key to identify the mitigation device description.
device_type	character varying(20)		Brief description of the mitigation device, and foreign key link to z_warp_strike_device table.
description	character varying(80)		

Indexes:
"pk_z_mitigation_description" PRIMARY KEY, btree (mi_key)
"ui_z_mitigation_description" UNIQUE, btree (device_type)

Table z_mitigation_event

Comment: Coded details of any mitigation events during an observation sampling period.

Column	Type	Null?	Description
mitigation_key	integer	No	System generated unique key to identify the mitigation event.
sample_key	integer		System generated key of the warp strike sample.
event_code	character(1)		Code for the mitigation event.

Indexes:
"pk_z_mitigation_event" PRIMARY KEY, btree (mitigation_key)
Foreign-key constraints:
"fk_z_mitigation_event__z_warp_strike_s" FOREIGN KEY (sample_key)
REFERENCES z_warp_strike_sample(sample_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_mitigation_event_code

Comment: Descriptions of mitigation event codes.

Column	Type	Null?	Description
mit_event_key	integer	No	System generated unique key to identify the mitigation event.
event_code	character(1)		Code for the mitigation event.
description	character(180)		The meaning of the code as defined on the inside cover of the Observer Trawl Catch Effort Logbook version 3.

Table z_nfb_autopsy

Comment: Nonfish bycatch autopsy data including species identification for seabirds.

Column	Type	Null?	Description
autopsy_number	character varying(8)		Autopsy number assigned by the autopsy person.
autopsy_date	date		The date when the autopsy provider did the autopsy of the bird or processing of the photograph.
autopsy_type	character varying(40)		Method of species identification, eg from Autopsy or Photo. Records prior to the Jul 2013 to Jun 2014 year dataset are assumed to be from Autopsy, ie autopsy_numbers <= 90385.
autopsy_status	character varying(32)		New column from 1Jul14. 'Extract and Photo' means the autopsy provider received a photograph (or took one of the autopsy bird) and it was listed and matched to observer information in the MPI COD extract. 'Photo only' means a photograph was received from the Observer, but there is no matching information in the MPI COD extract. 'Extract only' means a seabird interaction was recorded by the Observers in the MPI COD extract, but no photograph was taken (or if one was, the autopsy provider had not received it).
photo_status	character varying(32)		Additional column similar to autopsy_status.
vessel_name	character varying(50)		The name of the vessel.
trip_number	integer		Trip number allocated by the observer programme.
station_number	character varying(24)		Station number as tow or set number, generally from observer label. From trip 3192 corrected details are usually put in brackets.
specimen_number	character varying(24)		Specimen number assigned by the observer, or in brackets by autopsy person from trip 3192. If there is a 1a, 1b, etc. this usually means there was either two or more dead birds in the same bag with only one observer card or an extra wing in the bag meaning there was an additional interaction for that observer card.
extract_specimen_no	character varying(8)		Specimen or sample number assigned by the autopsy person to match the cod extract data, from data received 4Jul2016.
capture_date	character varying(10)		Date of capture. The date is primarily from the observer lable when listed. If it is not recorded, it is taken from the COD extract.
time	character varying(5)		Time as recorded by the observer.

latitude	character varying(12)	Latitude as recorded by the observer on the specimen label.
longitude	character varying(16)	Longitude as recorded by the observer on the specimen label.
observer_name	character varying(50)	The name of the observer.
observer_species_code	character varying(8)	3 character species code recorded by the observer.
observer_species_name	character varying(64)	The species common name assigned by the observer.
common_name	character varying(50)	Common name for the species confirmed from autopsy.
scientific_name	character varying(64)	Scientific (latin) name confirmed from autopsy.
species	character(3)	Species Code as a result of positive identification e.g. from autopsy.
sex	character varying(8)	Sex of the animal from autopsy.
age	character varying(16)	Age classification of the animal from autopsy.
vessel_type	character varying(32)	Type of vessel, relating to fishing method(s) used.
position_desc	character varying(45)	Position description, generated from the lat/long on the observer sheet primarily, but if it is not recorded it is generated from the COD extract.
fat_score	character varying(8)	Fat score 1-5 from autopsy, based on the relative amount of subcutaneous fat and fat on and around organs: 1 = no fat, to 5 = extremely fat.
moult	character varying(140)	Moult description regarding brood patch etc from autopsy.
likely_death	character varying(24)	Likely cause of death determined from autopsy.
stomach	character varying(90)	Stomach contents from autopsy.
gizzard	character(70)	Gizzard contents from autopsy.
obs_analysis	character varying(50)	New column from 1Jul14. Observer identification of the seabird matched that of the autopsy provider (AP). 'ID Correct' is when Observer ID match, 'ID correct to species group' is when observers say wandering albatross and AP confirm Gibson's albatross, or cape petrels and AP confirm Snares cape petrel, etc., ID presumed correct (no photo to confirm) means when observers have given an ID for a bird that was caught and released alive at sea and no photograph was taken (or if it was we havenâ€™t received it to date), so we have to assume that the observer has identified the bird correctly. [Hence it lines up with the Status column stating Extract only].
received_date	date	Date that the data file, ie record was received.
comments	character varying(512)	

Table z_nfb_nonfish_catch

Comment: Catch and biological details of non-fish bycatch.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
tow_number	character varying(8)		Sequential identifier for each tow or station.
caught_time	integer		Time caught to distinguish bycatch incidents.
specimen_number	character varying(16)		Sequential number for each specimen.
observer_species	character(3)		Species code identified by observer.
species	character(3)		Species code as a result of positive identification e.g. after post mortem.
length_cm	character varying(16)		Standard length for seals, Fork length for dolphins.
girth	integer		Girth (mm) at posterior margin of foreflippers.
blubber_mm	integer		Blubber thickness in millimetres.
sex_code	character(1)		Code to Identify the sex of a fish e.g. 0=unsexed, 1=male, 2=female, 3=unknown (unable to determine).
observer_sex_code	character(1)		Observer determined code to identify the sex of a fish e.g. 0=unsexed, 1=male, 2=female, 3=unknown (unable to determine).
age_code	character varying(7)		Maturity for seabirds A=adult, AB=adult breeder, AN=adult nonbreeder, SA=subadult, I=immature, J=juvenile. Age mammals, estimated e.g. growth increments in years.
actual_age_code	character varying(7)		Actual age for marine mammals.
tag_id	character varying(32)		Tag or band number on specimen.
alive_code	character varying(8)		Whether the specimen was taken alive i.e. 1= alive, 2= dead, 3= killed, 4= decomposing.
marked_code	character(4)		Whether the specimen was retained or tagged and returned i.e. R= retained, D= discarded unmarked, M=Marked or tagged & discarded.
whole_kept_yn	character(1)		Whether the whole specimen was kept (0 = No, 1 = Yes).
head_yn	character(1)		Whether the head was kept (0 = No, 1 = Yes).
leg_yn	character(1)		Whether the leg was kept (0 = No, 1 = Yes).
ovary_yn	character(1)		Whether an ovary sample was taken (0 = No, 1 = Yes).
stomach_yn	character(1)		Whether a stomach sample was taken (0 = No, 1 = Yes).
teeth_yn	character(1)		Whether teeth were collected (0 = No, 1 = Yes).

skin_yn	character(1)	Whether a skin sample was taken (0 = No, 1 = Yes).
blubber_yn	character(1)	Whether a blubber sample was taken (0 = No, 1 = Yes).
muscle_yn	character(1)	Whether a muscle sample was taken (0 = No, 1 = Yes).
other_sample_yn	character(1)	Whether another sample was taken (0 = No, 1 = Yes), details held in comments.
observed_yn	character(1)	Whether observed caught species during fishing around vessel, (0 = No, 1 = Yes).
seen_number	integer	Number of species seen if observed during tow/set, recorded once against first specimen recorded.
net_caught_in	character varying(9)	Code for the net that this specimen was caught in, for Scampi trawling. P=Port, S=Starboard, C = Central.
remarks	character varying(512)	Additional remarks about the specimen e.g. more information about other sample.
capture_method	character(1)	Method of capture code.
injuries	character varying(5)	Injury status codes, as single letter codes.
samples_taken	character varying(5)	Codes for samples taken, as single letter codes.
image	character(1)	Flag to record that a photograph was taken of the bycatch.
s_date	character varying(16)	Start date of tow or set.

Table z_nfb_nonfish_observers

Comment: Observers recording the nonfish bycatch.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
observer1	character(5)		Code for the first observer.
observer2	character(5)		Code for the second observer.
form_version	character(12)		

Table z_nfb_nonfish_station

Comment: Details for stations with non-fish bycatch including extra parameters taken from the vessels tow log.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
tow_number	integer	No	Sequential identifier for each tow.
caught_time	integer	No	Time caught if known 24 hour format, NZST.
caught_latitude	numeric(5,1)		Caught position latitude (DDMM.m).
caught_longitude	numeric(7,1)		Caught position longitude (DDDMM.m).
caught_east_west	character(1)		Caught position meridian, E or W.
gear_depth	integer		Depth of gear in metres.
wind_knots	integer		Wind speed in knots.
wind_direction	integer		Wind direction in degrees 0 to 359
sea_state_beaufort	smallint		Sea state coded on the Beaufort scale.
cloud_cover	smallint		Code to identify cloud cover between 0 (clear) and 8 (full cover).
offal_discard	character(4)		Code identifying type of offal discard.
tori_pole_used_yn	character(4)		Whether a tori pole was used: 0 = No, 1 = Yes.
bird_device_yn	character(1)		Whether a bird scaring device was used: 0 = No, 1 = Yes.
gear_event_yn	character(1)		Whether an event that affected the chance of catching a non-fish species took place. (Yes / No).
bird_device_comments	character varying(64)		Comments about the bird scaring device.
surface_temperature	numeric(3,1)		Sea surface temperature (decimal degrees C).
headline_temperature	numeric(3,1)		Sea temperature at headline in degrees.
tow_type	character(3)		Code identifying the tow type, from part 1 of the fishing path 1 = bottom throughout, 2 = midwater at relatively constant depth, 3 = midwater in a broad range of depths, 4 = mixed bottom & midwater.
tow_configuration	character(4)		Code for tow configuration, from part 2 of the fishing path, e.g. A = Straight line, E = Constant depth contour, etc.
tow_turns_number	integer		Number of turns during tow, from part 3 of the fishing path.
station_comments	character varying(540)		Comments about the non fish bycatch station.

wingspread	integer	Distance between the wings of the net in metres.

Indexes:
"pk_z_nfb_nonfish_station" PRIMARY KEY, btree (trip_number, tow_number, caught_time)

Table z_nfb_psi

Comment: Observer Protected Species Interactions.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
interaction_number	smallint		Sequential number throughout the trip and across voyages that corresponds with the event.
observer_code	character(5)		4 character unique observer code, usually the first initial followed by the first 3 letters of observers surname.
on_duty	character(1)		If observer was on duty when the interaction occurred (Y/N).
witnessed	character(1)		If observer witnessed the interaction (Y/N).
animal_seen	character(1)		If the observer has seen the animal at any point of the interaction (Y/N).
station_number	smallint		Sequential identifier for each station (tow or set).
observation_date	character(10)		The date of the first observation of the capture (New Zealand Standard Time).
observation_time	character(5)		The time of the first observation of the capture (New Zealand Standard Time).
species	character(3)		Three character species code for the captured species.
life_status	character(1)		Life status when first sighted: 1 = Alive 2 = Dead (Showing no signs of life) 4 = Decomposing.
interaction_type	character(1)		Code for the type of interation: F = Caught in the fishing gear M = Caught in seabird mitigation device L = Deck impact/deck landing B = Brought on board R = Caught in recreational gear O = Other U = Unknown.
capture_location	character(2)		Code for the capture location (note that some codes are method specific).
body_part	character(1)		Code for part of the body was caught: E = Entire body caught W = Caught by wing

		F = Caught by flipper/feet H = Caught by head M = Caught by mouth U = Unknown.
injury_status_1	character(1)	1st code for the injury status of the animal.
injury_status_2	character(1)	2nd code for the injury status of the animal.
injury_status_3	character(1)	3rd code for the injury status of the animal.
length_cm	character(5)	Length for animals that are captured where measuring is part of the sampling protocol.
measure_method	character(1)	Measurement method used: A = Actual length E = Estimated length.
sex	character(1)	Sex of the animal: M = Male F = Female U = Sex unable to be determined N = Not sexed - the Observer did not attempt to determine the sex of the animal.
csp_tag_number	character varying(5)	CSP tag number the observer attaches if they tag a dead animal before returning it to the sea or before packaging it for autopsy (post-mortem tag).
sample_1_code	character(1)	1st code for samples taken from the animal.
sample_2_code	character(1)	2nd code for samples taken from the animal.
sample_3_code	character(1)	3rd code for samples taken from the animal.
sample_4_code	character(1)	4th code for samples taken from the animal.
end_status	character(1)	Code for what happened to the animal at the end of the incident.
tag_capture	character varying(16)	Tag number if the animal has a pre-existing tag on it.
operating_within_plans	character(1)	Operating in accordance with both the Protected Species Risk Management Plan (PSRMP) and Vessel Management Plan (VMP). (Y/N).
image_filename	character varying(256)	Name of photos relating to the capture.
comments	character varying	PSI comment.

Table z_nfb_psi_trip

Comment: Observer Protected Species Interaction Form Summary.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
obs1	character(5)		Observer 1 code, comprised of first initial followed by the first three letters of observers surname, unless this is not unique. From Excel form version, not recorded on paper form.
obs2	character(5)		Observer 2 code, comprised of first initial followed by the first three letters of observers surname, unless this is not unique. From Excel form version, not recorded on paper form.
psi_interactions	character(1)		If there were protected species interactions for the trip (Y/N).
form_version	character varying(19)		Version of the PSI form.

Indexes:
"z_nfb_psi_trip_pkey" PRIMARY KEY, btree (trip_number)

Table z_observer_trip_comment

Comment: General Comments associated with a trip.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
comments	character varying	No	Comments about the trip.

Indexes:
"pk_z_observer_trip_comment" PRIMARY KEY, btree (trip_number)
Foreign-key constraints:
"fk_z_observer_trip_comment_ref" FOREIGN KEY (trip_number)
REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_observer_trip_master

Comment: Header information common to a trip.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
vessel_key	numeric(9,0)		The Ministry of Fisheries allocated key for the vessel.
nation_code	character varying(6)		Nation of origin of the vessel. Can also be nation codes for charter companies.
observer_1_name	character varying(50)		Name of the first observer.
observer_2_name	character varying(50)		Name of the second observer.
trip_start_date	date	No	The first day of the trip.
trip_end_date	date	No	The last day of the trip.
callsign	character(8)		The radio callsign for the vessel.
vessel_name	character varying(50)		The name of the vessel.
origin_code	character(4)		Code to identify the origin of the data, e.g. SOP = Scientific Observer Programme, HMC = Hoki Management Company, ORM = Orange Roughy Management company, FRC = Fisheries Research Centre, CSP = Conservation Services Programme (DOC).
data_updated_date	date		The last update for the trip data, used to determine whether the trip should be reprocessed through the Stage Database.
company	character varying(50)		The New Zealand fishing company that holds the current fishing agreement with the vessel.

Indexes:
  "pk_z_observer_trip_master" PRIMARY KEY, btree (trip_number)
  "ndx_obs_tr_ma2" btree (trip_end_date)
  "ndx_obs_tr_ma3" btree (trip_end_date)
  "ndx_obs_tr_ma4" btree (vessel_key)
Referenced by:
  TABLE "z_observer_trip_comment" CONSTRAINT "fk_z_observer_trip_comment_ref" FOREIGN KEY (trip_number)
   REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "z_troll_configuration" CONSTRAINT "fk_z_troll__reference_z_observ" FOREIGN KEY (trip_number)
   REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "z_troll_gear" CONSTRAINT "fk_z_troll__reference_z_observ" FOREIGN KEY (trip_number)

REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "z_troll_hourly" CONSTRAINT "fk_z_troll__reference_z_observ" FOREIGN KEY (trip_number)
REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "z_troll_temperature" CONSTRAINT "fk_z_troll__reference_z_observ" FOREIGN KEY (trip_number)
REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "z_trw_new_observer_proc_summ" CONSTRAINT "fk_z_trw_new_observer_proc_summ" FOREIGN KEY (trip_number)
REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "z_trw_new_observer_station" CONSTRAINT "fk_z_trw_new_observer_station" FOREIGN KEY (trip_number)
REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "z_trw_observer_station" CONSTRAINT "fk_z_trw_ob_z_obs_tri_z_observ" FOREIGN KEY (trip_number)
REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_oto_catalog

Comment: A Catalog of the ageing material, its storage location and current ageing status.

Column	Type	Null?	Description
origin_code	character(3)	No	Code to identify the origin of the trip where the sample was taken e.g. SOP Scientific Observer Programme - Catch Sampling.
age_year	smallint	No	The year the fish was sampled, fishing year for SOP samples.
trip_number	integer	No	The trip number on which the aging sample was taken. Note in the Age database, this includes character trip codes but only the SOP trips are included which included only numeric trip numbers.
sample_number	integer	No	Sample number from which the aging sample was taken within the trip (for SOP this is the tow or station number).
sub_sample_number	integer	No	Number of sub sample for aging. This will be subcatch number for Research trawls, cluster (box), number for SMP. SOP do not use this. -1 = Not Used.
species_area	character varying(5)		Area code for where the fish was caught, typically FMA code.
species	character(3)	No	Species code of the fish sampled for ageing.
fish_number	integer	No	Sequential identifying number of an individual fish for any one trip, sample, sub sample, and species.
material_code	integer	No	Code to identify material collected for ageing e.g. 1 Otolith, 2 Scales, 3 Spines, 4 Vertebrae, 5 Teeth, 6 Statolith (cephalopod).
room_name	character varying(50)		Room number where the ageing material can be found.
sub_location_name	character varying(50)		Location within the room; e.g., file cabinet number, draw number.
age_status_code	character(25)		Current status of the ageing material, e.g. READ, CATALOGUED.
status_date	date		Date when status was last updated.

Indexes:

"pk_z_oto_catalog" PRIMARY KEY, btree (trip_number, sample_number, sub_sample_number, species, fish_number, material_code)

Table z_oto_fish

Comment: Biological information about a fish specimen for ageing.

Column	Type	Null?	Description
origin_code	character(3)	No	Code to identify the origin of the trip where the sample was taken e.g. SOP Scientific Observer Programme - Catch Sampling.
age_year	integer	No	The year the fish was sampled, fishing year for SOP samples.
trip_number	integer	No	The trip number on which the aging sample was taken. Note in the Age database, this includes character trip codes but only the SOP trips are included which included only numeric trip numbers.
sample_number	integer	No	Sample number from which the aging sample was taken within the trip (for SOP this is the tow or station number).
sub_sample_number	character varying(4)	No	Number of sub sample for aging. This will be subcatch number for research trawls, cluster (box), number for SMP. SOP do not use this. -1 = Not Used.
species_area	character varying(5)		Area code for where the fish was caught, typically FMA code.
species	character(3)	No	Species code of the fish sampled for ageing.
fish_number	integer	No	Sequential identifying number of an individual fish for any one trip, sample, sub sample, and species.
fish_length	numeric(4,1)		Length measurement of the fish in cm.
length_code	character(1)		Code to identify precision of length measurement, R = Rounded down to nearest cm, E = Exact to 1 decimal place.
fish_sex	character(1)		Code to identify the sex of a fish e.g. 0=unsexed, 1=male, 2=female, 3=unknown (unable to determine).
gonad_stage	character(1)		Numeric code for stage of gonad maturity.
fish_weight	integer		Weight (grams) of the fish.
otolith_weight	numeric(7,4)		Weight (grams) of an otolith.
otolith_weight2	numeric(7,4)		Weight (grams) of the second otolith.
otolith_length	numeric(4,1)		Length (mm) of an otolith.
otolith_width	numeric(3,1)		Width (mm) of an otolith.
material1	integer		Code to identify material collected for ageing e.g. 1 Otolith 2 Scales

		3 Spines 4 Vertebrae 5 Teeth 6 Statolith (cephalopod).
material2	integer	Code to identify a second material collected for ageing e.g. 1 Otolith 2 Scales 3 Spines 4 Vertebrae 5 Teeth 6 Statolith (cephalopod).
fish_select_method	integer	Code for how the fish was selected for ageing: 1 = random, 2 = every i th fish, 3 = by size class.
project_code	character varying(12)	MFish project code that funded the databasing of this record.
fish_sampled_comment	character varying(240)	Contains information on fish sampled.

Indexes:
"pk_z_oto_fish" PRIMARY KEY, btree (trip_number, sample_number, species, fish_number)
"ndx_z_oto_fish_trip" btree (trip_number)
"nx_z_oto_fish_trip" btree (trip_number)
Foreign-key constraints:
"fk_z_oto_fish__ma1" FOREIGN KEY (material1) REFERENCES z_oto_material(material_code)
ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_z_oto_fish__ma2" FOREIGN KEY (material2) REFERENCES z_oto_material(material_code)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_oto_material

Comment: Coding structure for list of materials used for ageing; e.g., otoliths, vertebrae, scales.

Column	Type	Null?	Description
material_code	integer	No	Code to identify material collected for ageing e.g. 1 Otolith, 2 Scales, 3 Spines, 4 Vertebrae, 5 Teeth, 6 Statolith (cephalopod).
material_description	character varying(512)	No	Description of ageing material, see material code for examples.

Indexes:
"pk_z_oto_material" PRIMARY KEY, btree (material_code)
Referenced by:
TABLE "z_oto_fish" CONSTRAINT "fk_z_oto_fish__ma1" FOREIGN KEY (material1)
REFERENCES z_oto_material(material_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "z_oto_fish" CONSTRAINT "fk_z_oto_fish__ma2" FOREIGN KEY (material2)
REFERENCES z_oto_material(material_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_oto_origin

Comment: Coding structure to identify the origin of the ageing material.

Column	Type	Null?	Description
origin_code	character(4)	No	Code to identify the origin of the trip where the sample was taken, e.g. SOP Scientific Observer Programme - Catch Sampling SMP Stock Monitoring Programme - Market Sampling TAN Tangaroa KAH Kaharoa AEX Amaltal Explorer COR Cordella GIL Giljanes WIL Will Watch JCO James Cook WES Wesermunde ARR Arrow REC Recreational MIS Miscellaneous e.g., mixed landing, or no length frequency AKA Akagi Maru BFN Bluefin - MAF Auckland Vessel SHI Shinkai Maru RIG Rig catch sampling (gill-netting and trawl surveys) ELE Elephantfish catch sampling WJS W.J.Scott BUC Otago Buccaneer AKS Akebono Maru No. 3 AKE Akebono Maru No. 73.
origin_description	character varying(512)	No	Description of the origin, see origin_code for examples.

Indexes:
"pk_z_oto_origin" PRIMARY KEY, btree (origin_code)

Table z_ps_activity

Comment: Details from Observer Programme Purse Seine vessel activity log.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
station_number	integer	No	Sequential identifier for each station (activity).
trip_day	integer		Trip days since the observer joined the vessel.
start_date	character varying(16)		Activity date of the tow or set.
activity	character varying(4)		Activity code from the activity log.
set_number	integer		Set number recorded on the activity log.
start_time	character varying(5)		Start time of activity (24 hour format, NZST).
end_time	character varying(5)		End time of activity (24 hour format, NZST).
latitude	character varying(12)		Start position latitude (DDMM.m) of activity.
northsouth	character(1)		Start position meridian, N or S. of activity
longitude	character varying(12)		Start position longitude (DDDMM.m) of activity.
eastwest	character(1)		Start position meridian, E or W. of activity
port	character varying(12)		Port where berthed.
beaufort	smallint		Beaufort scale.
school_association	character(2)		Target school association with code eg A9 if saw birds feeding on the target school.
school_detected	character(2)		Code for who initially detected the target school, e.g. 1 = vessel, 2 = aircraft, etc.
target_species	character(3)		Species Code for the species being targeted.
fma	character varying(5)		FMA code. Usually Fisheries Management FMA codes, but also research codes where appropriate.
aircraft_callsign	character varying(6)		Spotter aircraft call sign.
comments	character varying(512)		Comments from activity log.

Indexes:
"pk_z_ps_activity" PRIMARY KEY, btree (trip_number, station_number)

Table z_ps_catch

Comment: Catch data per set for method Purse-seine (PS).

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
set_number	integer	No	Sequential identifier for each station (set).
species	character(3)		Code to identify the species caught on the set.
processed_state	character varying(4)		Code to identify the processed state.
hold_number	character varying(4)		Hold number catch stored in.
green_weight	numeric(11,3)		The weight for the species caught in kilograms.
catch_tag	character varying(3)		Tag code to identify the weight method.

Table z_ps_set

Comment: Purse seine Catch Effort data from the Observer Purse seine catch Effort Form.

Column	Type	Null?	Description
trip_number	integer	No	Trip identification number issued by the observer group.
celr_no	integer		CELR number for this set.
set_number	integer	No	A sequential number for each set of a purse seine trip.
fishing_method	character varying(3)		The fishing method = PS.
target_species	character(3)		Species Code for the species being targeted.
fma	character varying(5)		FMA code. Usually Fisheries Management FMA codes, but also research codes where appropriate.
aircraft_callsign	character varying(6)		Spotter aircraft call sign.
school_association	character(2)		Target school association with code eg A9 if saw birds feeding on the target school.
school_detected	character(2)		Code for who initially detected the target school, e.g. 1 = vessel, 2 = aircraft, etc.
start_latitude	character varying(12)		Start position latitude (DDMM.mmm) of set.
start_ns	character(1)		Start position meridian, N or S, of set.
start_longitude	character varying(12)		Start position longitude (DDDMM.mmm) of set.
start_east_west	character(1)		Start position meridian, E or W, of set.
sea_temperature	numeric(3,1)		Sea surface temperature, degrees Celsius.
bottom_depth	integer		Seabed depth (m).
sea_state	smallint		Sea state (Beaufort scale).
set_date	character varying(16)		Set start date.
start_time	character varying(5)		Start time of set (24 hour format, NZST).
time_code1	character(1)		Time code used for start of set: 1 = someone on watch (vessel), 2 = observer.
begin_purse	character varying(5)		Time begin pursing (winch on).
time_code2	character(1)		Time code used for begin pursing: 1 = someone on watch (vessel), 2 = observer.
end_purse	character varying(5)		Time end pursing (rings up).
time_code3	character(1)		Time code used for end pursing: 1 = someone on watch (vessel), 2 = observer.
net_rolling	character varying(5)		Time net rolling started.
time_code4	character(1)		Time code used for net rolling: 1 = someone on watch (vessel), 2 = observer.

net_sacking	character varying(5)	Time net sacking began.
time_code5	character(1)	Time code used for net sacking: 1 = someone on watch (vessel), 2 = observer.
begin_brail	character varying(5)	Time begin brailing.
time_code6	character(1)	Time code used for begin brailing: 1 = someone on watch (vessel), 2 = observer.
end_brail	character varying(5)	Time end brailing.
time_code7	character(1)	Time code used for end brailing: 1 = someone on watch (vessel), 2 = observer.
end_time	character varying(5)	End time of set (24 hour format, NZST).
time_code8	character(1)	Time code used for end of set: 1 = someone on watch (vessel), 2 = observer.
total_gw_surface	integer	Total greenweight at surface kg.
total_gw_surface_method	character(3)	Total greenweight at surface assessment method.
total_gw_onboard	integer	Total greenweight onboard kg.
total_gw_onboard_method	character(3)	Total greenweight onboard assessment method.
result_code	character(1)	Result of set code, e.g. 1 = Entire school caught, 2 = Some caught / some lost, 3 = Entire school lost, etc.
brail_code	character(1)	Brail type code, P = suction pump, S = scoop, O = other.
total_losses	integer	Amount of loss of any (potential) catch during setting, kg.
loss_method	character(3)	Method code for determining amount of total losses.
loss_code	character varying(2)	Loss code that describes how loss occurred.
loss_stage	character(2)	Event stage code indicating the stage of the fishing event when the catch loss occurred, e.g. SS = Start of Set, DP = During Pursing, etc .
loss_time	character varying(5)	Time (NZST) that the primary catch loss occurred.
time_code9	character(1)	Time code used for time catch lost: 1 = someone on watch (vessel), 2 = observer.
mdbd_yn	character(1)	Sampling MDBD this set Y/N.
lf_yn	character(1)	Sampling LF this set Y/N.
birds_obs	character(1)	Bird observations this set Y/N.
nfb_yn	character(1)	Sampling NFB this set Y/N.
mammal	character(1)	Number of marine mammals captured in the tow.
seabird	character(1)	Number of seabirds captured in the tow.
turtle	character(1)	Number of turtles captured.
comment_ce	character varying(380)	Comments from Catch Effort form.

Table z_ref_observer

Comment: The list of Observers who may or have undertaken SOP trips.

Column	Type	Null?	Description
observer_key	numeric(9,0)	No	System generated key to identify the observer.
observer_name	character varying(50)	No	Full Name of the observer in < Last Name> <First Name> format.
observer_status	character(3)	No	Status of the observer (to filter for entry of new trips)\r Values: CUR - Current, OBS - Obsolete.
start_date	date	No	Start Date from which this observer may be used.
end_date	date		End Date (if known) to which this observer may be used.
last_name	character varying(50)	No	Last name of the Observer.
first_name	character varying(50)	No	First name of the Observer.

Indexes:
  "pk_z_ref_observer" PRIMARY KEY, btree (observer_key)

Table z_setnet_catch

Comment: Green_weights from the Setnet Catch Effort Form.

Column	Type	Null?	Description
set_catch_number	integer	No	Sequential number for each catch record on a single setnet Catch Effort Form.
trip_number	integer	No	Trip number allocated by the observer programme.
set_number	integer	No	Sequential set number.
species	character(3)		Species code.
end_type	character(3)		End destination of the material: ACC = Accidentally lost ALI = Discarded alive (likely to survive) DIS = Discarded dead MEA = Used for meal EAT = Taken to galley RET = Retained by observer RDI = Sample retained by observer, remainder discarded PRO =Processed by vessel.
greenweight	integer		Green weight of the species.
location_analysis	character(1)		Weight method - location part.
method_analysis	smallint		The method of analysis of weight.

Table z_setnet_gear

Comment: Set net gear details.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
obs1	character(5)		First initial followed by the first three letters of observers surname.
net_id	character varying(4)	No	Setnet code for the setnet detailed.
net_height	numeric(3,1)		The height from foot rope to topline (0.1m).
net_mesh_size	smallint		Nominal net mesh size of net.
float_size	smallint		Average float size (mm).
max_float_spacing	numeric(4,1)		The maximum distance between floats.
ground_weight	integer		Nominal average of ground weights.
max_weight_spacing	numeric(5,1)		The maximum distance between weights on ground rope.
max_pinger_spacing	numeric(4,1)		The maximum spacing between pingers.
comments	character varying(512)		Any comments for the described setnet gear.
net_length	integer		Length of the net (m), from form Version 2.

Table z_setnet_nets_set

Comment: Set net gear used for a set.

Column	Type	Null?	Description
nets_set_key	integer	No	Unique number for each net set of a setnet Catch Effort record.
trip_number	integer	No	Trip number allocated by the observer programme.
set_number	integer	No	Sequential set number.
net_id	character varying(4)	No	Setnet code for the setnet detailed.
net_length	integer		The length of net used for the net ID (m). Used for v1 of the form only. Refer to z_setnet_gear for net_length from later form versions.

Indexes:
"pk_z_setnet_nets_set" PRIMARY KEY, btree (trip_number, set_number, net_id, nets_set_key)

Table z_setnet_station

Comment: Setnet effort data from the Observer Setnet Catch/Effort Form.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the observer programme.
set_number	integer	No	Sequential identifier for each set.
target_species	character(3)		Species Code for the species being targeted.
set_observed	character(1)		Observer did observe this setting. Y or N.
start_set_date	character varying(12)		Date at start of set.
start_set_time	character varying(12)		Time at start of set (24 hour format, NZST).
start_set_latitude	character varying(12)		Start set position latitude (DDMM.mm).
start_set_nth_sth	character(1)		Set start position latitude north or south of the equator (N or S).
start_set_longitude	character varying(12)		Start set position longitude (DDDMM.mm).
start_set_east_west	character(1)		Start set position meridian, E or W.
start_set_bottom_depth	integer		Depth to seabed under vessel at the start of set in metres.
net_set_on_bottom	character(1)		Captain intended to set net on the bottom Y N or U.
net_set_clean	character(1)		The net was set clean of fish Y N or O.
set_offal_discharge	character(1)		Code for offal discharge during seting: D = Offal was discharged M = Offal was minced and then discharged H = Offal was held and not discharged N = No offal was produced U = Not observed.
set_fish_discharge	character(1)		Code for whole fish discharge during seting: D = Whole fish were discharged from the factory M = Whole fish were minced and then discharged H = Whole fish were held and not discharged N = No whole fish discards were produced U = Not observed.
set_interrupt_time	integer		Duration setting net was interrupted in minutes.
set_beaufort	character varying(12)		The number on the Beaufort scale that best represents the sea state, (0 - 12) during setting.

end_set_time	character varying(12)	Time at end of set (24 hour format, NZST).
end_set_latitude	character varying(12)	End set position latitude (DDMM.mm).
end_set_nth_sth	character(1)	Set end position latitude north or south of the equator (N or S).
end_set_longitude	character varying(12)	End set position longitude (DDDMM.mm).
end_set_east_west	character(1)	End set position meridian, E or W.
end_set_bottom_depth	integer	Depth to seabed under vessel at the end of set in metres.
haul_observed	character(1)	Observer did observe this hauling. Y or N.
start_haul_date	character varying(12)	Date at start of haul.
start_haul_time	character varying(12)	Start time of haul (24 hour format, NZST).
end_hauled_first	character(1)	Direction net hauled, if backwards Y N or O.
haul_beaufort	character varying(12)	The number on the Beaufort scale that best represents the sea state, (0 - 12) at start of hauling.
end_haul_time	character varying(12)	End time of haul (24 hour format, NZST).
haul_offal_discharge	character(1)	Code for offal discharge during hauling: D = Offal was discharged M = Offal was minced and then discharged H = Offal was held and not discharged N = No offal was produced U = Not observed.
haul_fish_discharge	character(1)	Code for whole fish discharge during hauling: D = Whole fish were discharged from the factory M = Whole fish were minced and then discharged H = Whole fish were held and not discharged N = No whole fish discards were produced U = Not observed.
haul_interrupt_time	integer	Duration hauling net was interrupted in minutes.
nonfish_bycatch	character(1)	Code to show whether any non-fish bycatch (seabird, marine mammal, marine reptile) occurred. Y = Yes, N = No, U = Not observed.
benthic_materials	character(1)	Code to show whether any benthic materials came up in the set. Y = Yes, N = No, U = Not observed.
total_spacer	integer	The total length of all the spacer sections contained within this set (m).
bio_samples	smallint	The number of species with biological samples taken.
comments	character varying(512)	Comments for setnet Catch Effort.

ce_return_number	character varying(12)	Number from the vessels catch effort return for this set.

Table z_sled_comment

Comment: Comments on the SLED.

Column	Type	Null?	Description
sled_key	bigint	No	System generated key to identify the sled.
trip_number	integer		Trip number for an observed trip.
equipment_code	character(2)		Equipment code consisting of the letter S plus a number.
comments	character varying(600)		

Indexes:
"pk_z_sled_com" PRIMARY KEY, btree (sled_key)
Foreign-key constraints:
"fk_z_sled_com_ref" FOREIGN KEY (sled_key) REFERENCES z_sled_details(sled_key)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_sled_details

Comment: Details of the Sea Lion Exclusion Device (SLED).

Column	Type	Null?	Description
sled_key	bigint	No	System generated key to identify the sled.
trip_number	integer	No	Trip number for an observed trip.
vessel_name	character varying(30)		Full name of the vessel.
obs1	character(5)		First initial followed by the first three letters of observers surname involved in the measurement of the SLED.
obs2	character(5)		As for obs1.
equipment_code	character(2)		Equipment code consisting of the letter S plus a number. Each SLED measured during the trip is numbered from 1 onwards.
measure_type	character varying(2)		Full to indicate that this is a full record of measurements. Partial for partial measurements.
based_on	character(2)		If changes then an Equipment code (eg S1) of the SLED that has been altered entered.
measure_date	date		Date that the measurements were made.
measure_reason	character(3)		Code to explain why this measurement was taken: I = Initial measurement D = description of the device in a Damaged state R = measurement of the device after it has been Repaired O = some Other reason for this measurement.
grid_id	character varying(12)		Unique grid ID number of this SLED.
grid_type	character(1)		Type of grid used, e.g. 2 section, 3 section or Other.
grid_shape	character(1)		Shape of the grid used, e.g. Oval, Oblong or Square.
grid_max_width	integer		Width of the grid at its widest point (including the width (mm) of the outer frame).
frame_min_dia	integer		Diameter of the steel bar that the frame of the grid is made of, in millimetres.
bar_min_dia	integer		Diameter of the steel bar that the bars of the grid are made of, in millimetres.
section1_max_height	integer		Height (at its maximum point) of each of Section 1 excluding the thickness of the outer frame.

section2_max_height	integer	Height (at its maximum point) of each of Section 2 excluding the thickness of the outer frame.
section3_max_height	integer	Height (at its maximum point) of each of Section 3 excluding the thickness of the outer frame.
escape_hatch_width	integer	Width of the escape hatch at the base of the triangle (record in millimetres).
escape_hatch_length	integer	Length of the escape hatch from the centre of the base to the apex (record in millimetres).
hood_width	integer	Width of the hood (the distance between the leading corners of the hood, recorded in millimetres).
hood_height	integer	Height of the hood (the vertical distance to the top of the hood when it is fully extended, recorded in millimetres).
hood_length	integer	Length of the hood (the distance along the hood from the top of the hood to the back of the hood, recorded in millimetres).
hood_mesh	integer	Mesh size of the hood (millimetres. From corner to corner along the diagonal of the mesh with the mesh stretched.
hood_edge_rope	integer	Length of Leading Edge of the hood (around the curve, in millimetres).
hood_floats	integer	A count of floats attached to the kite.
lengthener_mesh	integer	Mesh size of the lengthener (mm)
lengthener_type	character(1)	Net in the lengthener is a 2 seam or a 4 seam net.
kite_length	integer	Length of kite in mm.
kite_width	integer	Width of kite in mm.
kite_stitch	character(1)	Whether the stitching between the Kite and Leading Edge of the hood is continuous (no gaps).

Indexes:
  "pk_z_sled" PRIMARY KEY, btree (sled_key)
Referenced by:
  TABLE "z_sled_comment" CONSTRAINT "fk_z_sled_com_ref" FOREIGN KEY (sled_key)
   REFERENCES z_sled_details(sled_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "z_sled_grid" CONSTRAINT "fk_z_sled_grid_reference_z_sled" FOREIGN KEY (sled_key)
   REFERENCES z_sled_details(sled_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_sled_grid

Comment: SLED grid bar spacings (mm).

Column	Type	Null?	Description
sled_grid_key	bigint	No	System generated key to identify the sled grid.
sled_key	bigint	No	System generated key to identify the sled.
trip_number	integer	No	Trip number for an observed trip.
equipment_code	character(2)		Equipment code consisting of the letter S plus a number.
section	smallint	No	Section number.
space_number	integer		Grid bar spacing number.
space_mm	integer		Grid bar spacing (mm) as the spaces between the bars.

Indexes:
"pk_z_sled_spacing" PRIMARY KEY, btree (sled_grid_key)
Foreign-key constraints:
"fk_z_sled_grid_reference_z_sled" FOREIGN KEY (sled_key)
REFERENCES z_sled_details(sled_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_sll_2015_deck_log

Comment: Catches of specimens (fish, birds, seals, etc) made by tuna longlines, from SLL Deck Log Version 0.1 2015, and the subsequent version.

Column	Type	Null?	Description
specimen_id_number	integer	No	Unique identification number assigned to each specimen. System generated.
page_number	integer		Page number of the Deck Log form for this set.
number_of_pages	integer		Number of pages of Deck Log forms for this set.
trip_number	integer	No	Trip number allocated by the observer programme.
set_number	smallint		Number assigned by observers to a distinct observed set.
observer_code	character varying(5)		Observer code, typically First name initial followed by the first three letters of observers surname.
sample_number	integer		Number assigned by the observer to samples where taken.
species	character(3)		Species code for the specimen recorded.
landed_time	integer		The time observer recorded the specimen as being brought onboard or alongside the vessel (24 hour time NZST).
life_status_landed	character(1)		Life status on landing code to denote the level of the specimens life signs.
fate	character(3)		Final fate of specimen - discard state, lost, unobserved; or primary processing type, if retained.
destination_code	character(3)		Destination or processed state code.
hook_location	character(1)		Hook location code. M=mouth, G=gullet, I=gills, U=gut, F=foul hooked.
shark_handling	character varying(4)		Code to denote the crews handling of the specimen.
damage_code	character varying(3)		Code for the type of damage to the specimen (caused by driftnets, shark bites, etc) on specimens.
life_status_release	character(1)		Life status on release code. Same codes as used for life status on landing.
fork_length	integer		Fork length of the specimen in centimetres. Except for billfish - lower jaw to fork.
length2	integer		Second length of the specimen in centimetres. Refer length2_code for measurement method.
length2_code	character(1)		Measurement method code for length2.
greenweight	numeric(11,3)		Greenweight of the specimen in kilograms.
gw_method	character(1)		Green weight method code, for method used to obtain the greenweight, eg 1 Eyeball estimate, 2 etc for types of scales.

processed_weight	numeric(11,3)	Processed weight of the specimen in kilograms.
pw_method	character(1)	Processed weight method code, for the method used to weigh the processed fish. Uses same codes as gw_method.
sex_code	character(1)	Code to Identify the sex of a fish, 1=male, 2=female, 3=unknown (unable to determine), 4=unsexed.
sample_1_code	smallint	Code for 1st sample taken from specimen.
sample_2_code	smallint	Code for 2nd sample taken from specimen.
sample_3_code	smallint	Code for 3rd sample taken from specimen.
sample_4_code	smallint	Code for 4th sample taken from specimen.
number_caught	integer	Number caught, for those tallied.
observation_type	smallint	Observation data type code: 1=observed, 2=tallied. System generated value.
comments	text	

Indexes:
"pk_z_sll_2015_deck_log" PRIMARY KEY, btree (specimen_id_number)

Table z_sll_2015_stomach

Comment: Stomach sample data from fish caught on tuna surface longlines (SLL) vessels, from 2015 revision of the form.

Column	Type	Null?	Description
page_number	integer		Page number of the form for this trip.
number_of_pages	integer		Number of pages of Stomach Contents Log forms for this trip.
trip_number	integer	No	Trip number allocated by the observer programme.
observer_code	character varying(5)		Observer code, typically first name initial followed by the first three letters of observers surname.
set_number	smallint		Number assigned by observers to a distinct observed set.
sample_number	integer		Number assigned by observer to samples taken. Should correspond to sample number on deck log.
species	character(3)		Species code for the species sampled.
fullness	character(1)		Stomach fullness code. 0 = Empty, 1 = Trace, 2 = Part full (1/4 - 3/4), 3 = Full, 4 = Everted.
prey1	character(3)		Species code for prey 1 or BAI for bait.
condition1	character(1)		Prey 1 condition code. 1 = Fresh, 2 = Part digested, 3 = Heavily digested.
volume1	smallint		Percentage volume of prey 1 species in the stomach contents.
prey2	character(3)		Species code for prey 2 or BAI for bait.
condition2	character(1)		Prey 2 condition code. 1 = Fresh, 2 = Part digested, 3 = Heavily digested.
volume2	smallint		Percentage volume of prey 2 species in the stomach contents.
prey3	character(3)		Species code for prey 3 or BAI for bait.
condition3	character(1)		Prey 3 condition code. 1 = Fresh, 2 = Part digested, 3 = Heavily digested.
volume3	smallint		Percentage volume of prey 3 species in the stomach contents.
prey4	character(3)		Species code for prey 4 or BAI for bait.
condition4	character(1)		Prey 4 condition code. 1 = Fresh, 2 = Part digested, 3 = Heavily digested.
volume4	smallint		Percentage volume of prey 4 species in the stomach contents.
comments	text		

Table z_sll_2018_baskets

Comment: Surface long line gear, detail on baskets deployed for fishing events. From SLL gear form Version 3, August 2018.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
observer_code	character varying(5)		Observer code, typically first name initial followed by the first three letters of observers surname.
gear_code	character varying(3)		Code used as unique identifier for a single Longline configuration.
basket_number	character varying(2)		Identifier for basket number deployed on longline configuration.
number_snoods	character varying(2)		Number of snoods in the basket.
snood_length	character varying(2)		Length of snoods (m).
hook_type	character varying(512)		Hook type and size, as referred to by retailers.
number_money_makers	character varying(2)		Number of money-makers in the basket.
money_maker_diameter	character varying(2)		Money-maker diameter (cm).
number_weighted_snoods	character varying(2)		Number of weighted snoods deployed.
weighting_type	character varying(2)		Weighting type: H = Hook pods, S = Sliding weight, W = Weighted swivel, F = Fixed weights, C = shark Clip, O = Other (described in comments).
distance_weight_to_hook	character varying(4)		Distance between the hook and the closest weight (cm).
weight	character varying(3)		Mass of the weight closest to hook (g).

Table z_sll_2018_gear

Comment: Surface long line gear data. From SLL gear form Version 3, August 2018.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
observer_code	character(5)		Observer code, typically first name initial followed by the first three letters of observers surname.
gear_code	character varying(3)		Code used as unique identifier for a single Longline configuration.
mainline_material	character varying(50)		Material used in mainline construction.
mainline_diameter	character varying(3)		Diameter of the mainline/backbone (mm).
float_line_length	character varying(2)		Length of the float/drop line (m).
float_line_diameter	character varying(2)		Diameter of the float/drop line (mm).
surface_float_diameter	character varying(2)		Diameter of the surface floats (cm)
comments	character varying		Observer comment on longline gear configuration.

Table z_sll_2018_haul

Comment: Effort data on line hauling activities of tuna longlines. From SLL Haul log, version 3, August 2018.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
set_number	smallint		Number assigned by observers to a distinct observed set.
observer_code	character varying(5)		Observer code, typically first name initial followed by the first three letters of observers surname.
end_hauled_first	character varying(1)		Which end of line hauled first: 1 = End set first, 2 = End set last.
start_recd_by_obs	character varying(1)		Whether hauling start details were recorded by: Y = observer, or N = vessel.
start_date	character varying(8)		Start date of hauling.
start_time	character varying(4)		Start time of hauling.
start_depth	character varying(4)		Seabed depth at start of hauling (m).
start_latitude	character varying(5)		Latitude at start of hauling (DDMM.m format).
start_north_south	character varying(1)		Northern or Southern Hemisphere for start latitude.
start_longitude	character varying(6)		Longitude at start of hauling (DDDMM.m format).
start_east_west	character varying(1)		Eastern or Western hemisphere for start longitude.
end_recd_by_obs	character varying(1)		Whether hauling end details were recorded by: Y = observer, or N = vessel.
end_date	character varying(8)		End date of hauling.
end_time	character varying(4)		End time of hauling.
end_depth	character varying(4)		Seabed depth at end of hauling (m).
end_latitude	character varying(5)		Latitude at end of hauling (DDMM.m format).
end_north_south	character varying(1)		Northern or Southern Hemisphere for end latitude.
end_longitude	character varying(6)		Longitude at end of hauling (DDMM.m format).
end_east_west	character varying(1)		Eastern or Western hemisphere for end longitude.
start_cloud_cover	character varying(3)		Cloud cover percentage at start of hauling, from v2 April 2018 version of the form.
start_wind_direction	character varying(3)		Wind direction (0-359 degrees) at start of hauling, from v2 April 2018 version of the form.
start_beaufort	character varying(2)		Beaufort scale that represents the sea state at start of hauling, from v2 April 2018 version of the form.
start_vessel_speed	character varying(4)		Vessel speed (knots) at start of hauling, from v2 April 2018 version of the form.

mid_cloud_cover	character varying(3)	Cloud cover percentage at mid-point of hauling.
mid_wind_direction	character varying(3)	Wind direction (0-359 degrees) at mid-point of hauling.
mid_beaufort	character varying(2)	Beaufort scale that represents the sea state at mid-point of hauling.
mid_vessel_speed	character varying(4)	Vessel speed (knots) at mid-point of hauling.
end_cloud_cover	character varying(3)	Cloud cover percentage at end of hauling, from v2 April 2018 version of the form.
end_wind_direction	character varying(3)	Wind direction (0-359 degrees) at end of hauling, from v2 April 2018 version of the form.
end_beaufort	character varying(2)	Beaufort scale that represents the sea state at end of hauling, from v2 April 2018 version of the form.
end_vessel_speed	character varying(4)	Vessel speed (knots) at end of hauling, from v2 April 2018 version of the form.
obs_1_start_time	character varying(4)	Start time of observation period 1.
obs_1_end_time	character varying(4)	End time of observation period 1.
obs_1_hooks_hauled	character varying(5)	Number of hooks observed hauled in period 1.
obs_2_start_time	character varying(4)	Start time of observation period 2.
obs_2_end_time	character varying(4)	End time of observation period 2.
obs_2_hooks_hauled	character varying(5)	Number of hooks observed hauled in period 2.
obs_3_start_time	character varying(4)	Start time of observation period 3.
obs_3_end_time	character varying(4)	End time of observation period 3.
obs_3_hooks_hauled	character varying(5)	Number of hooks observed hauled in period 3.
obs_4_start_time	character varying(4)	Start time of observation period 4.
obs_4_end_time	character varying(4)	End time of observation period 4.
obs_4_hooks_hauled	character varying(5)	Number of hooks observed hauled in period 4.
obs_5_start_time	character varying(4)	Start time of observation period 5.
obs_5_end_time	character varying(4)	End time of observation period 5.
obs_5_hooks_hauled	character varying(5)	Number of hooks observed hauled in period 5.
obs_6_start_time	character varying(4)	Start time of observation period 6.
obs_6_end_time	character varying(4)	End time of observation period 6.
obs_6_hooks_hauled	character varying(5)	Number of hooks observed hauled in period 6.
port_offal_discard	character varying(1)	Code for offal discarding on port side.
port_bait_discard	character varying(1)	Code for bait discarding on port side.
port_whole_fish_discard	character varying(1)	Code for whole fish discarding on port side.
stbd_offal_discard	character varying(1)	Code for offal discarding on starboard side.

stbd_bait_discard	character varying(1)	Code for bait discarding on starboard side.
stbd_whole_fish_discard	character varying(1)	Code for whole fish discarding on starboard side.
stern_offal_discard	character varying(1)	Code for offal discarding aft over stern.
stern_bait_discard	character varying(1)	Code for bait discarding aft over stern.
stern_whole_fish_discard	character varying(1)	Code for whole fish discarding aft over stern.
water_cannon_used_yn	character varying(1)	Whether water cannons were used as a mitigation strategy for protected species captures (Y/N)
acoustic_scarer_used_yn	character varying(1)	Whether acoustic bird deterrents were used as a mitigation strategy for protected species captures (Y/N).
brickle_curtain_used_yn	character varying(1)	Whether a brickle curtain was deployed while hauling (Y/N).
other_mitigation_used_yn	character varying(1)	Whether any other mitigation devices were used during the haul (Y/N). Detailed in observer comments.
fishing_gear_discard_yn	character varying(1)	Whether fishing gear was discarded (Y/N).
entire_haul_observed_yn	character varying(1)	Whether the entire haul was observed (Y/N).
number_hooks_lost	character varying(6)	Number of hooks lost, excluding those deliberately cut off.
comments	character varying	Observer comments on line hauling event.

Table z_sll_2018_set

Comment: Effort data on line setting activities of tuna longlines. From SLL Longline Set log, version 3, August 2018.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
set_number	smallint		Number assigned by observers to a distinct observed set.
target_species	character varying(3)		Nominal vessel target species for this setting event.
observer_code	character varying(5)		Observer code, typically first name initial followed by the first three letters of observers surname.
start_rec_by_obs	character varying(1)		Whether setting start details were recorded by: Y = observer, or N = vessel.
start_date	character varying(8)		Start date of setting.
start_time	character varying(4)		Start time of setting.
start_depth	character varying(4)		Seabed depth at start of setting (m).
start_latitude	character varying(5)		Latitude at start of setting (DDMM.m format).
start_north_south	character varying(1)		Northern or Southern Hemisphere for start latitude.
start_longitude	character varying(6)		Longitude at start of setting (DDDMM.m format).
start_east_west	character varying(1)		Eastern or Western hemisphere for start longitude.
end_rec_by_obs	character varying(1)		Whether setting end details were recorded by: Y = observer, or N = vessel.
end_date	character varying(8)		End date of setting.
end_time	character varying(4)		End time of setting.
end_depth	character varying(4)		Seabed depth at end of setting.
end_latitude	character varying(5)		Latitude at end of setting (DDMM.m format).
end_north_south	character varying(1)		Northern or Southern hemipshere for end latitude.
end_longitude	character varying(6)		Longitude at end of setting (DDDMM.m format).
end_east_west	character varying(1)		Eastern or Western hemisphere for end longitude.
cloud_cover	character varying(3)		Cloud cover percent at start of setting.
wind_direction	character varying(3)		Wind direction (bearing 0-359) at start of setting.
beaufort	character varying(3)		Beaufort scale conditions at start of setting.
period_1_start	character varying(4)		Start time of observation period 1.
period_1_end	character varying(4)		End time of observation period 1.
period_2_start	character varying(4)		Start time of observation period 2.
period_2_end	character varying(4)		End time of observation period 2.

period_3_start	character varying(4)	Start time of observation period 3.
period_3_end	character varying(4)	End time of observation period 3.
gear_code	character varying(3)	Gear code for the line set, refers to code on SLL Gear form.
hooks_set	character varying(5)	Number of hooks set.
baskets_number	character varying(3)	Number of baskets deployed on set.
light_sticks_yn	character varying(1)	Presence of light sticks on line (Y/N).
light_stick_type	character varying(1)	Type of light sticks used: 1 = Chemical, 2 = Electric, 3 = Mixture of Chemical and Electric.
avg_sticks_per_basket	character varying(3)	Average number of light sticks per basket.
vessel_speed	character varying(4)	Vessel speed (knots).
snood_signal_time	character varying(3)	Snood signal time (seconds).
line_setting_height	character varying(4)	Line setting height (m).
line_length	character varying(3)	Length of line (km).
setting_path	character varying(3)	2-part code for path of vessel while setting. Code detail on back of setting form.
min_hook_depth	character varying(3)	Minimum hook depth (m).
max_hook_depth	character varying(3)	Maximum hook depth (m).
dist_stern_to_bait_min	character varying(2)	Minimum distance from stern to bait entry point (m).
dist_stern_to_bait_max	character varying(2)	Maximum distance from stern to bait entry point (m).
dist_bait_to_tori	character varying(2)	Lateral distance from bait entry point to tori line (m).
bait_prop_wash_yn	character varying(1)	Whether bait lands inside vessels prop wash (Y/N/U).
acoustic_bird_deterrent_yn	character varying(1)	Whether acoustic bird deterrents were used as a mitigation strategy for protected species captures (Y/N/U).
water_cannon_yn	character varying(1)	Whether water cannons were used as a mitigation strategy for protected species captures (Y/N/U).
deck_light_yn	character varying(1)	Whether there was unnecessary deck lighting while setting (Y/N/U).
fishing_gear_discard_yn	character varying(1)	Whether fishing gear was discarded (Y/N/U).
discards_during_setting	character varying(1)	Whether there was any offal, bait or whole fish discarded during setting.
bait_1_species	character varying(3)	3-char species code for bait 1 species.
bait_1_composition	character varying(3)	Percentage of total baited hooks comprising bait 1 species.
bait_1_state	character varying(1)	State of bait 1 species: F = Frozen, T = Thawed, S = Semi-thawed.
bait_1_dyed_yn	character varying(1)	Whether bait 1 was dyed (Y/N).
bait_2_species	character varying(3)	3-char species code for bait 2 species.
bait_2_composition	character varying(3)	Percentage of total baited hooks comprising bait 2 species.

bait_2_state	character varying(1)	State of bait 2 species: F = Frozen, T = Thawed, S = Semi-thawed.
bait_2_dyed_yn	character varying(1)	Whether species 2 bait was dyed (Y/N).
bait_3_species	character varying(3)	3-char species code for bait 3 species.
bait_3_composition	character varying(3)	Percentage of total baited hooks comprising bait 3 species.
bait_3_state	character varying(1)	State of bait 3 species: F = Frozen, T = Thawed, S = Semi-thawed.
bait_3_dyed_yn	character varying(1)	Whether species 3 bait was dyed (Y/N).
tori_used_yn	character varying(1)	Whether a tori line was deployed during setting (Y/N/U).
port_tori_gear_code	character varying(2)	Gear code of tori line attached on port side of vessel.
port_tori_problem_code	character varying(3)	Problem code for port side tori line.
centre_tori_gear_code	character varying(2)	Gear code of tori line attached on centre of vessel.
centre_tori_problem_code	character varying(3)	Problem code for centre tori line.
stbd_tori_gear_code	character varying(2)	Gear code of tori line attached on starboard side of vessel.
stbd_tori_problem_code	character varying(3)	Problem code for starboard side tori line.
comments	character varying	Observer comments on line setting event.

Table z_sll_bait

Comment: Profile on the bait strategy used on a range of tuna longline sets.

Column	Type	Null?	Description
trip_number	integer	No	Unique number assigned to each distinct SLL observed trip.
start_set_num	smallint	No	Starting set for described bait strategy.
end_set_num	smallint	No	Final set for described bait strategy.
bait_number	smallint	No	Bait number from the start of the basket, corresponds to snood_no from snoods table.
bait_code	smallint		Code to identify type of bait used.
baskets_descript	character varying(75)		Brief description of the range of baskets to which arrangement applies, if blank applies to all baskets.
bait_type	character varying(80)		

Indexes:
"z_sll_bait_trip_indx" btree (trip_number)
Foreign-key constraints:
"fk_z_sll_bait_ref_bait" FOREIGN KEY (bait_code) REFERENCES z_sll_bait_code(bait_code)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_sll_bait_code

Comment: Lookup list of bait codes used in Surface Long Lining.

Column	Type	Null?	Description
bait_code	integer	No	Code to identify type of bait used.
bait_type_description	character varying(512)	No	Description of the bait code.

Indexes:
"pk_z_sll_bait_code" PRIMARY KEY, btree (bait_code)
Referenced by:
TABLE "z_sll_bait" CONSTRAINT "fk_z_sll_bait_ref_bait" FOREIGN KEY (bait_code)
REFERENCES z_sll_bait_code(bait_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_sll_catch_specimen

Comment: Description of catches of specimens (fish, birds, seals, etc) made by tuna longlines.

Column	Type	Null?	Description
specimen_id_number	integer	No	Unique identification number assigned to each specimen.
trip_number	integer	No	Unique number assigned to each distinct SLL observed trip.
set_number	smallint		Number assigned by observers to a distinct observed set.
sample_number	integer		Number assigned by the observer to samples where taken.
species	character(3)		Species code for the specimen recorded.
landed_time	integer		The time observer recorded the specimen as being landed (24 hour time NZST).
species_status_code	smallint		Code to identify the species status. Not used since 1991.
specimen_life_code	character(4)		Code to denote the level of the specimens life signs (used from 1992).
handling_code	character(4)		Code to denote the crews handling of the specimen (used from 1992).
old_damage_code	character(4)		Code to describe the type and severity of damage to a specimen. Used up to the 1991 season, from 1992 the value has been captured in damage_code (with a new set of values).
damage_code	smallint		Numeric code for the type of damage to the specimen (caused by driftnets, shark bites, etc) on specimens. Used from 1992 previously the value was captured in old_damage_code (with a different set of values).
number_caught	integer		Number caught, including those recorded individually and those tallied.
fork_length	integer		Fork length of the specimen in centimetres. Except for billfish - lower jaw to fork.
length2	integer		Second length reading for specimen in centimetres. For billfish - eye to fork length; For sharks - total length from 2003 onwards, precaudal length prior to 2002.
greenweight	numeric(11,3)		Greenweight of the specimen in kilograms.
processing_code	character(4)		Code to indicate type of processing done on the specimen.
processed_weight	numeric(11,3)		Processed weight of the specimen in kilograms.
sex_code	integer		Code to Identify the sex of a fish, 1=male, 2=female, 3=unknown (unable to determine), 4=unsexed.

basket_number	integer	Number of the Basket (of hooks) in which specimen was caught. Not used since 1997.
bait_code	integer	Code to identify type of bait used. Not used since 1992.
sample_1_code	smallint	Code for 1st sample taken from specimen.
sample_2_code	smallint	Code for 2nd sample taken from specimen.
sample_3_code	smallint	Code for 3rd sample taken from specimen.
sample_4_code	smallint	Code for 4th sample taken from specimen.
sample_5_code	smallint	Code for 5th sample taken from specimen.
sample_6_code	smallint	Code for 6th sample taken from specimen.
sample_7_code	smallint	Code for 7th sample taken from specimen.
sample_8_code	smallint	Code for 8th sample taken from specimen.
true_species	character(3)	The species code as identified by a bird autopsy specialist or the Natural History Museum.
observation_type	smallint	Observation data type code: 1=observed, 2=tallied, 3=prior to start of observations, 4=after end of observations, 5=missed at unknown time during haul.
seabird_age	character(2)	Age of seabirds A=adult, AB=adult breeder, AN=adult nonbreeder, SA=subadult, I=immature, J=juvenile.
specimen_performance	smallint	Performance flag for the catch specimen record: 1 = OK; 0 = Reject.

Indexes:
"pk_z_sll_catch_specimen" PRIMARY KEY, btree (specimen_id_number)

Table z_sll_damage_code

Comment: Codes to describe the type of damage sustained to a landed specimen.

Column	Type	Null?	Description
damage_code	integer	No	Code to identify the type of damage to a specimen (caused by driftnets, shark bites, etc) (used from 1992).
damage_type_description	character varying(512)	No	Description of the damage code.

Indexes:
"pk_z_sll_damage_code" PRIMARY KEY, btree (damage_code)

Table z_sll_event_code

Comment: Event codes used to describe interruptions to hauling and observations of the hauling.

Column	Type	Null?	Description
event_code	integer	No	Code to identify the described event.
event_description	character varying(512)	No	Description of the described event code.

Indexes:
"pk_z_sll_event_code" PRIMARY KEY, btree (event_code)
Referenced by:
TABLE "z_sll_events" CONSTRAINT "fk_z_sll_ev_z_sll_ev__z_sll_ev" FOREIGN KEY (event_code)
REFERENCES z_sll_event_code(event_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_sll_events

Comment: Profile of events affecting haul/observations.

Column	Type	Null?	Description
trip_number	integer	No	Unique number assigned to each distinct SLL observed trip.
set_number	smallint	No	Number assigned by observers to a distinct observed set.
event_code	smallint		Code to identify the described event.
time_start	integer		24-hr time at which the event started (hauling/recording stopped) (NZST).
time_resumed	integer		24-hr time at which the event ended and hauling/recording resumed (NZST).
minutes_number	integer		Number of minutes described event lasted for. Note that prior to 1991 it recorded the duration of the whole set.
event_comment	character varying(512)		Comment about the event.

Indexes:
  "z_sll_events_event_indx" btree (event_code)
  "z_sll_events_set_indx" btree (set_number)
  "z_sll_events_trip_indx" btree (trip_number)
Foreign-key constraints:
  "fk_z_sll_ev_z_sll_ev__z_sll_ev" FOREIGN KEY (event_code)
   REFERENCES z_sll_event_code(event_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_sll_handling_code

Comment: Valid specimen handling codes and associated descriptions.

Column	Type	Null?	Description
handling_code	character(4)	No	Code to denote the crews handling of the specimen (used from 1992).
handling_description	character varying(512)	No	Description of the handling code.

Indexes:
"pk_z_sll_handling_code" PRIMARY KEY, btree (handling_code)

Table z_sll_haul

Comment: Hourly information of observed tuna longline hauls.

Column	Type	Null?	Description
trip_number	integer	No	Unique number assigned to each distinct SLL observed trip.
set_number	smallint	No	Number assigned by observers to a distinct observed set.
haul_date	date	No	Date on which the haul commenced.
observation_time	integer		Time of observation of haul (HHMM).
haul_latitude	integer		Haul position latitude at observation time (DDMM format).
haul_longitude	integer		Haul position longitude at observation time (DDDMM format).
haul_east_west	character(1)		Haul position meridian, E or W at observation time.
bottom_depth	integer		Depth of bottom at time of observation in metres.
surface_temperature	numeric(3,1)		Sea surface temperature (decimal degrees C).
vessel_speed	numeric(3,1)		Speed of the vessel at the time of observation in knots.
vessel_heading	integer		Vessels heading at time of observation (degrees).
wind_beaufortscale	smallint		Beaufort scale of wind force at time of observation in range 0 to 12.
wind_direction	character varying(3)		Wind direction at time of observation in degrees (0 to 360).
end_hauled_first	integer		Code describing at which end of the longline was hauled first: 1=the end that was set first, 2=the end that was set last.
start_finish_code	character(1)		Code to identify significant observation records for each haul: S=Start (first record), F=finish (last record), O=Observer observations end (usually when 12 hours worked), L=Late start by observer.
haul_performance_code	integer		Performance flag for the haul record 1 = OK; 2 = Reject.

Indexes:
  "ndx_sll_haul_set" btree (set_number)
  "ndx_sll_haul_trip" btree (trip_number)

Table z_sll_line_set

Comment: Profile information on all observed sets of tuna longlines.

Column	Type	Null?	Description
bird_area	integer		Code for the bird area setting started in.
fma_code	integer		Fisheries Management Area that the set started in.
trip_number	integer	No	Unique number assigned to each distinct SLL observed trip.
set_number	smallint	No	Number assigned by observers to a distinct observed set.
set_date	date		Date at which the set started.
target_species	character(3)		Species Code for the species being targeted.
start_time	integer		Start time (24 hour format, NZST).
start_latitude	integer		Start position latitude (DDMM format).
start_longitude	integer		Start position longitude (DDDMM format).
start_east_west	character(1)		Start position meridian, E or W.
end_date	date		Date at which set ended.
end_time	integer		End time (24 hour format, NZST).
end_latitude	integer		End position latitude (DDMM format).
end_longitude	integer		End position longitude (DDDMM format).
end_east_west	character(1)		End position meridian, E or W.
line_length	numeric(9,3)		Length of line in kilometres.
basket_number	integer		Number of baskets on the line.
hook_number	integer		Number of hooks on the line.
observed_hooks	integer		Estimated number of hooks observed, derived from haul time not observed (generally less than hooks set where 12 hours haul duration is exceeded).
vessel_speed	numeric(7,3)		Speed of the vessel during the set in knots.
snood_signal_time	numeric(3,1)		The snood signal time in seconds.
line_feed_rate	numeric(3,1)		Line feeder rate in metres per second.
buoy_length	integer		Length between buoy at surface and connection to mainline below in metres.
min_depth	integer		Expected minimum depth of the line when set in metres.
max_depth	integer		Expected maximum depth of the line when set in metres.
ccamlr_tori_pole_yn	character(1)		Whether the Tori Pole used was to CCAMLR specifications (Y/N).
tori_used_yn	character(1)		Indicates presence/absence of tori (bird) poles on the set.

streamer_number	integer	Number of streamers used in association with tori pole.
tori_length	integer	Length of tori line (metres).
tori_height	integer	Height of attachment of tori line above the water (metres).
line_entry_yn	character(1)	Whether the Tori line was over bait entry point. (Yes or No).
bait_stream	integer	Distance between bait landing point and tori line in metres.
bait_wake_yn	character(1)	Whether the bait was landing inside of vessel wake (Y/N).
bait_vessel	integer	Distance between bait landing point and vessel midline in metres.
bait_sink	integer	Distance behind vessel that bait sank in metres.
cloud_cover	integer	Percentage cloud cover at start of the set.
barometer_reading	integer	Barometer reading at start of the set.
start_wind_direction	character varying(3)	Wind direction at start of the set (degrees 0 to 359).
start_wind_force	smallint	Wind force at start of set (Beaufort scale 0-12).
weather_code	integer	Code to identify weather conditions, an integer value between 1 and 127.
bait_condition	character(4)	Whether the Bait was frozen or thawed (values F Frozen, T thawed).
bait_thrower_used_yn	character(1)	Whether a Mechanical bait thrower was used (Y/N).
vessel_number	integer	The number of vessels within a 24 nautical mile radius.
longliner_number	integer	The number of longliners within a 24 nautical mile radius.
set_observation_time	integer	Time of observation of set details (hhmm).
set_performance	integer	Performance flag for the line set: 1 = OK; 0 = Reject.
comments	character varying(80)	Any information pertinent to the set not included in the previous attributes.

Indexes:
  "pk_z_sll_line_set" PRIMARY KEY, btree (trip_number, set_number)
Foreign-key constraints:
  "fk_z_sll_li_z_sll_lin_z_sll_we" FOREIGN KEY (weather_code)
   REFERENCES z_sll_weather_code(weather_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_sll_processed_code

Comment: Valid fish processed codes used in Surface Long Lining.

Column	Type	Null?	Description
processed_code	character(4)	No	Code for fish processed type that was weighed.
processed_type_description	character varying(512)	No	Description of processed code.

Indexes:
"pk_z_sll_processed_code" PRIMARY KEY, btree (processed_code)

Table z_sll_sample_code

Comment: Sample codes used to describe the type of sample taken from a specimen.

Column	Type	Null?	Description
sample_code	integer	No	Code used identify type of sample taken from specimen.
sample_description	character varying(512)	No	Description of sample taken.

Indexes:
"pk_z_sll_sample_code" PRIMARY KEY, btree (sample_code) CLUSTER

Table z_sll_snoods

Comment: Profile on the snood arrangement strategy used on a range of tuna longline sets.

Column	Type	Null?	Description
trip_number	integer	No	Unique number assigned to each distinct SLL observed trip.
snood_num	smallint	No	Snood number to which the data applies, corresponds to bait_no in the bait table.
start_set_num	smallint		Starting set to which the snood arrangement applies.
end_set_num	smallint		Final set to which snood arrangement applies.
total_length	integer		Total length of the identified snood in metres.
hook_colour_name	character varying(30)		Colour of the hook on the snood.
hook_type_name	character varying(30)		Type of hook on the snood.
baskets_descript	character varying(75)		Brief description of the range of baskets to which arrangement applies, if not present then applies to all baskets.

Indexes:
"z_sll_snoods_trip_indx" btree (trip_number)

Table z_sll_species_status_code

Comment: Valid Species status codes used for Surface Long Lining.

Column	Type	Null?	Description
species_status_code	integer	No	Code to identify the species status.
species_status_description	character varying(512)	No	Description of the species status code.

Indexes:
"pk_z_sll_species_status_code" PRIMARY KEY, btree (species_status_code)

Table z_sll_specimen_life_code

Comment: Valid Specimen life sign codes and descriptions.

Column	Type	Null?	Description
specimen_life_code	character(4)	No	Code to denote the level of the specimens life signs (used from 1992).
specimen_life_signs_descript	character varying(512)	No	Description of the specimen life code.

Indexes:
"pk_z_sll_specimen_life_code" PRIMARY KEY, btree (specimen_life_code)

Table z_sll_stomach

Comment: Stomach sample data from fish caught on tuna surface longlines (SLL) vessels.

Column	Type	Null?	Description
trip_number	integer	No	Unique number assigned to each distinct SLL observed trip.
set_number	smallint	No	Observed set to which following data applies.
sample_number	integer	No	Number assigned by observer to samples taken.
fish	smallint		Percentage of fish in the stomach contents.
crust	smallint		Percentage of crustaceans in the stomach contents.
squid	smallint		Percentage of squid in the stomach contents.
bait	smallint		Percentage of bait species in the stomach contents.
salps	smallint		Percentage of salps in the stomach contents.
other	smallint		Percentage of other or unknown species in the stomach contents.
plastic_ingested	character(1)		Code for type of plastic ingested.
plastic_external	character(1)		Code for type of external plastic.
stom_empty	character(1)		Code E denotes stomach was empty.
fish_code	character(3)		Code for fish species eaten, where known.
crust_code	character(3)		Code for crustacean species eaten, where known.
bait_code	character(3)		Code for bait species eaten, where known.
other_code	character(3)		Code for other food type eaten, where known.

Table z_sll_trip

Comment: Profile information on all observed tuna longline trips.

Column	Type	Null?	Description
trip_number	integer	No	Unique number for each distinct SLL observed trip, assigned by the data manager.
obs_trip_no	integer		Trip number assigned by MFish observer group. Except for some early trips that numbers were not unique, where unique numbers greater than 30000 have been assigned.
vessel_key	integer		Ministry of Fisheries number to uniquely code each vessel.
observer	character varying(32)	No	Name of the observer.
vess_nat	character(1)		Code for the nationality of the observed vessel: J (Japan), N (New Zealand), P (Philippines), A (Australia).
vess_status	character(1)		Code for the fishing status of the observed vessel: F (foreign licensed), C (chartered) or D (domestic).
fishery	character(1)		Fishery the vessel is licensed to fish: S (South), N (North) or D (domestic).
streamer	character(1)		Indicates presence/absence of tori (bird) pole and line on the vessel.
start_of_trip	date		Date at the start of the first set of the trip.
end_of_trip	date		Date at the end of the last haul of the trip.
snood_code	smallint		Code describing pattern in snoods table, where 1=patterned and 2=random (for data up to 1992 inclusive).
comments	character varying(512)		Any information pertinent to the trip not included in the previous attributes that should be considered in analyses of data from this trip.

Indexes:
"pk_z_sll_trip" PRIMARY KEY, btree (trip_number)

Table z_sll_weather_code

Comment: Valid Weather codes used for Surface Long Lining.

Column	Type	Null?	Description
weather_code	integer	No	Code to identify weather conditions, an integer value between 1 and 127.
weather_description	character varying(512)	No	Description of the weather_code.

Indexes:
"pk_z_sll_weather_code" PRIMARY KEY, btree (weather_code)
Referenced by:
TABLE "z_sll_line_set" CONSTRAINT "fk_z_sll_li_z_sll_lin_z_sll_we" FOREIGN KEY (weather_code)
REFERENCES z_sll_weather_code(weather_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_smlf_totals

Comment: Totals row from the Length Frequency form.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
station_number	integer	No	Station number as sequential number for each station (tow).
species	character(3)	No	Species code.
length_measure_code	character varying(4)		1 character code for the method of measuring length.
weight_method	smallint		Integer code for the method of obtaining the sample weight.
sample_weight	numeric(6,1)		Weight (kg) of the sample taken.
males	smallint		Total number of males measured in the sample.
females	smallint		Total number of females measured in the sample.
total_fish	smallint		Total number of all fish measured in the sample.
female_stage1	smallint		Total number of stage 1 females measured in the sample.
female_stage2	smallint		Total number of stage 2 females measured in the sample.
female_stage3	smallint		Total number of stage 3 females measured in the sample.
female_stage4	smallint		Total number of stage 4 females measured in the sample.
female_stage5	smallint		Total number of stage 5 females measured in the sample.
male_stage1	smallint		Total number of stage 1 males measured in the sample.
male_stage2	smallint		Total number of stage 2 males measured in the sample.
male_stage3	smallint		Total number of stage 3 males measured in the sample.
male_stage4	smallint		Total number of stage 4 males measured in the sample.
male_stage5	smallint		Total number of stage 5 males measured in the sample.

Indexes:
  "indx_z_smlf_totals_stn" btree (station_number)
  "indx_z_smlf_totals_trp" btree (trip_number)

Table z_species

Comment: Species code table.

Column	Type	Null?	Description
code	character(3)	No	Three letter species code.
com_name	character varying(160)		Common name.
sci_name	character varying(160)		Scientific name, typically Genus & species.
oth_names	character varying(160)		Other names by which the species is known as.
notes	character varying(1000)		Any notes about the species including changes to taxonomy.
usage	character(1)		Usage code, e.g. R = Research, I = ITQ species, L = Commercial species used on LFRR returns, E = commercial species allowed only on catch Effort returns.
descrptn	character varying(2)		Description code for species group. e.g. B- = Birds, FG = Fish general, H- = Marine mammals, R- = Reptiles etc.
family_com	character varying(40)		Common family name for the species.
family_sci	character varying(40)		Scientific family name for the species.
key	character varying(5)		key, not used.
pref_meas_meth	character varying(3)		Preferred measurement method code, e.g., 1 = FL, 2 = TL, 3 = SL, 4 = ML etc.
max_length	integer		Recorded maximum length (cm).
mtab_code	integer		Integer code to identify species initially for use in Minitab statistical software.
aphia_id	integer		Key to link to World Register of Marine Species (WoRMS), www.marinespecies.org .

Indexes:
  "species_master_pkey" PRIMARY KEY, btree (code)
Referenced by:
  TABLE "y_lfs_length_frequency" CONSTRAINT "fk_y_lfs_lf_species" FOREIGN KEY (species)
   REFERENCES z_species(code) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "y_sll_2018_set" CONSTRAINT "fk_y_sll_2018_set__t_species" FOREIGN KEY (target_species)
   REFERENCES z_species(code) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "y_sll_catch_specimen" CONSTRAINT "fk_y_sll_catch_spec__species" FOREIGN KEY (species)
   REFERENCES z_species(code) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "y_sll_line_set" CONSTRAINT "fk_y_sll_line_set__target_sp" FOREIGN KEY (target_species)

REFERENCES z_species(code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_trw_new_observer_station" CONSTRAINT "fk_y_trw_new_observer_stn__tspecies" FOREIGN KEY (target_species)
REFERENCES z_species(code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_sys_data_return

Comment: General information about a return for a trip (e.g. Trawl, Conversion Factor, Surface LongLine, Non Fish Bycatch) used to control processing the data through the Stage database to the reporting database.

Column	Type	Null?	Description
return_key	numeric(9,0)	No	System generated unique key for the return.
trip_number	integer	No	The Trip number allocated by the SOP.
received_date	date		The date the return or data files were received.
loaded_date	date	No	The date the return or data were entered to load table/s.
modified_date	date	No	The date the return or data was last modified, does not apply to rank.
return_type_key	numeric(9,0)	No	System generated unique key associated with the Return Type.
type_count	integer		The number of forms for the associated Return Type.
rank	smallint	default 5	Quality of information, 1-5 where 5 = easy to enter no errors, 1 hard to enter many errors.

Indexes:
  "pk_z_sys_data_return" PRIMARY KEY, btree (return_key)
  "ndx_z_sys_data_return__trip" btree (trip_number)
Check constraints:
  "rank_range" CHECK (rank <= 5)
Foreign-key constraints:
  "fk_z_sys_data_return_ref" FOREIGN KEY (return_type_key)
   REFERENCES z_sys_return_type(return_type_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_sys_return_type

Comment: The type of Observer data return being captured, e.g. Trawl, Conversion Factor, Surface LongLine, Non Fish Bycatch etc.

Column	Type	Null?	Description
return_type_key	numeric(9,0)	No	System generated unique key associated with the Return Type.
brief_return_desc	character varying(18)		Brief descriptive text for the Return Type.
return_type_description	character varying(512)	No	Description of the Return Type.

Indexes:
"pk_z_sys_return_type" PRIMARY KEY, btree (return_type_key)

Referenced by:
TABLE "z_sys_data_return" CONSTRAINT "fk_z_sys_data_return_ref" FOREIGN KEY (return_type_key)
REFERENCES z_sys_return_type(return_type_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_tori_2018_line

Comment: Tori line details. From Tori line details form, Version 3, August 2018.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
observer_code	character varying(5)		Observer code, typically first name initial followed by the first three letters of observers surname.
measure_date	character varying(8)		Date measurements made by the observer.
gear_code	character varying(2)		Equipment code consisting of the letter T plus a number. Each tori line measured during the trip is numbered from 1 onwards.
measure_reason	character varying(1)		Code to explain why this measurement was taken: I = Initial measurement, D = description of the device in a Damaged state, R = measurement of the device after it has been Repaired, O = some Other reason for this measurement.
measure_type	character varying(1)		Indicates whether a F=Full record or a P=Partial measurement of the tori line.
based_on	character varying(2)		Where a Partial measurement is taken, this is the Equipment Code (eg T1) of the tori line that has been altered.
line_length	character varying(4)		The length of the line (in metres) rounded down to the nearest metre.
line_diameter	character varying(3)		The diameter of the line used (in millimetres) rounded down to the nearest millimetre.
aerial_extent	character varying(4)		Aerial extent of tori line (m).
recovery_rope_yn	character varying(1)		Presence of tori line recovery rope (Y/N).
attach1_tension_release_yn	character varying(1)		Presence of a tension release for the attachment point (Y/N).
attach1_height	character varying(3)		Height of attachment point above water (m).
attach1_distance	character varying(4)		Lateral distance (m) from centre of stern to attachment point.
attach1_port_stbd	character varying(1)		Port or Starboard lateral distance for attachment point measurement.
attach1_dist_stern	character varying(4)		Distance from stern to the attachment point (m).
attach1_adjustable_yn	character varying(1)		Whether attachment point is adjustable (Y/N).
attach2_tension_release_yn	character varying(1)		Whether dual attachment point has a tension release (Y/N).
attach2_height	character varying(3)		Height above water (m) for dual attachment point.
attach2_distance	character varying(4)		Lateral distance (m) from centre of stern to dual attach point.

attach2_port_stbd	character varying(1)	Port or Starboard lateral distance for dual attachment point measurement.
attach2_dist_join_stern	character varying(3)	Distance from join to stern (m).
attach2_dist_join_point	character varying(3)	Distance from join to attachment point (m).
attach2_streamer_join_yn	character varying(1)	Presence of streamers between second attachment point and join (Y/N).
long_streamer_yn	character varying(1)	Presence of long streamers (Y/N).
long_streamer_material	character varying(3)	Long streamer material type: T = plastic Tubing, S = plastic Strapping, O = Other (describe in comments).
long_streamer_distance	character varying(3)	Maxmimum distance between long streamers (m).
long_streamer_pair_single	character varying(1)	Whether streamers are S= Single or P = Paired.
long_streamer_number	character varying(3)	Number of long streamers or pairs.
long_streamer_max_length	character varying(4)	Maximum length of long streamers (m).
long_streamer_min_length	character varying(4)	Minimum length of long streamers (m).
long_streamer_diameter	character varying(3)	Diameter of long streamers (mm).
long_streamer_colour_code	character varying(4)	All the streamer colours observed for long streamers. For pre-2018 forms, this is for all streamers: P Pink R Red C orange (Carrot) Y Yellow G Green B Blue W broWn F Faded colour (any colour) O Other (Describe in comments).
long_streamer_dist_first	character varying(3)	Distance to first long streamer that reaches water (m).
long_streamer_aerial_yn	character varying(1)	Whether long streamers cover aerial extent (Y/N).
long_streamer_touch_water_yn	character varying(1)	Whether all long streamers touch water surface. Defunct from Version 3 onwards.
long_streamer_height_water	character varying(3)	The maximum height of long streamers above the water surface (m). Defunct from Version 3 onwards.
long_streamer_num_touch_water	character varying(2)	Number of long streamers that touch water.
light_streamer_yn	character varying(1)	Presence of light streamers (Y/N).

light_streamer_material	character varying(3)	Light streamer material type: T = plastic Tubing, S = plastic Strapping, O = Other (describe in comments).
light_streamer_distance	character varying(3)	Distance between light streamers (m).
light_streamer_pair_single	character varying(1)	Whether light streamers are S = Single or P = Paired.
light_streamer_number	character varying(3)	Number of light streamers/pairs.
light_streamer_max_length	character varying(3)	Maximum light streamer length (m).
light_streamer_min_length	character varying(3)	Minimum light streamer length (m).
light_streamer_diameter	character varying(3)	Diameter of light streamers (mm).
light_streamer_colour_code	character varying(4)	All the streamer colours observed for light streamers: P Pink R Red C orange (Carrot) Y Yellow G Green B Blue W broWn F Faded colour (any colour) O Other (Describe in comments).
tow_object_yn	character varying(1)	Presence of towed object (Y/N).
tow_object_code	character varying(1)	Type of towed object - refer to back of form or manual for types and their codes.
tow_object_size	character varying(5)	Size or weight of towed object. Refer to back of form or manual for specific size or weight measurement methods.
comments	character varying	Comments recorded by the observer.

Table z_tori_line

Comment: Tori line details form.

Column	Type	Null?	Description
tori_key	bigint	No	Tori line key
trip_number	integer		Trip number for an observed trip.
equipment_code	character varying(3)		Equipment code consisting of the letter T plus a number. Each tori line measured during the trip is numbered from 1 onwards.
obs1	character(5)		First initial followed by the first three letters of observers surname involved in the measurement of the tori line.
obs2	character(5)		As for obs 1
measure_date	date		Date that the measurements were made.
measure_reason	character varying(3)		Code to explain why this measurement was taken: I = Initial measurement D = description of the device in a Damaged state R = measurement of the device after it has been Repaired O = some Other reason for this measurement.
measure_type	character varying(3)		Full to indicate that this is a full record of measurements. If changes then Partial and an Equipment code (eg S1) of the SLED that has been altered entered.
based_on	character varying(3)		Where a Partial measurement the Equipment Code (eg T 1) of the tori line that has been altered.
line_diameter	smallint		The diameter of the line used (in millimetres) rounded down to the nearest millimetre.
line_length	integer		The length of the line (in metres) rounded down to the nearest metre.
reference_point	character(1)		The location of the point of attachment: B = trawl block used as a reference point (trawlers), E = bait entry point used as a reference point (long liners), O = some other point used as a reference point.
reference_location	character(1)		Location of the reference point: P = port side S = starboard side C = central.

distance_side	numeric(3,1)	Distance from the reference point to the attachment in the port/starboard direction
side_code	character(1)	Whether the attachment point is to port (P) or to starboard (S) of the reference point.
distance_along	numeric(3,1)	Distance from the reference point to the attachment in the forward/aft direction
along_code	character(1)	Whether the attachment point is to forward (F) or aft (A) of the reference point.
distance_vertical	numeric(3,1)	Distance from the reference point to the attachment point in the vertical direction
vertical_code	character(1)	Attachment point is above (A) or below (B) the reference point.
tow_object	character(1)	Type of towed object: F = inverted funnel or plastic cone L = length of thick line K = knot or loop of thick line B = buoy N = netted buoy S = sack or bag W = weight Z = no towed object O = other type of towed object.
object_size	numeric(5,2)	Size of the towed object, in metres or kg depending on type of towed object.
streamers_number	integer	The number of streamers. -not counting multiple branches off a streamer as separate streamers.
maximum_gap	numeric(4,2)	The largest gap from one streamer to the next, in metres.
minimum_branches	smallint	The minimum number of branches on any streamer on the line.
maximum_branches	smallint	The maximum number of branches on any streamer on the line.
minimum_length	numeric(4,2)	The minimum length of any branch of any streamer on the line, in metres.
maximum_length	numeric(4,2)	The maximum length of any branch of any streamer on the line, in metres.
minimum_dia	numeric(5,2)	The minimum diameter of any branch of any streamer on the line (in millimetres).
maximum_dia	numeric(5,2)	The maximum diameter of any branch of any streamer on the line (in millimetres).
colours	character varying(8)	All the different streamer colours observed: (P pink

		R red C carrot (orange) Y yellow G green B blue W brown F faded colour (any colour) O other.
materials	character varying(8)	Code for all the different streamer materials observed: T plastic tubing S plastic strapping O other.
comments	character varying(512)	
page_num	smallint	Page number for this trip.
last_page	character(1)	Last page for this trip.

Indexes:
"pk_z_tori_line" PRIMARY KEY, btree (tori_key)
"ind_tori_trip" btree (trip_number)

Table z_trawl_gear

Comment: Trawl Gear Details Form information.

Column	Type	Null?	Description
trl_gear_key	bigint	No	Trawl gear details key.
trip_number	integer	No	Trip number for an observed trip.
gear_equipment_code	character varying(5)		Gear equipment code for the trawl sys tem.
obs1	character(5)		First initial followed by the first three letters of observers surname.
obs2	character(5)		As for obs 1
number_of_warps	smallint		The number warps the vessel is using.
door_spread	character varying(10)		The design Doorspread (m).
door_type	character(1)		The door type code: C = Combination door (bottom or midwater) H = High aspect door (used in midwater trawls off the bottom) L = Low aspect door (used when bottom fishing) O = Other
door_area	numeric(4,2)		The door area, measured or from net plans, in square metres rounded to the nearest 0.1.
sweep_length	integer		The average length (m) of wire which connects the door to the bridle.
bridle_length	integer		The average length (m) of the top bridle.
trawl_wingless	character varying(3)		Y indicates that the trawl was wingless. N indicates that the trawl was winged. U could not determine.
headline_height	numeric(4,1)		The headline height that this trawl is currently designed to operate at.
headline_length	numeric(4,1)		The total length (m) of the headline.
wing_spread	integer		Wingspread (m)from the net plans unless the original value is no longer valid.
max_size_groundgear	integer		The maximum diameter (mm) of the largest structure (bobbin, disc etc) that is part of the ground gear.
groundgear_comp	character varying(9)		Codes groundgear components: B = Bobbins (includes all types-: Norwegian, hollow, solid etc) C = Chain as main backbone E = Extension piece (on the groundline)

		K = Rubber cookies R = Rubber blocks or spacers S = Rubber Discs T = Tickler chain W = Wire as main backbone O = Other.
number_of_codends	smallint	The number of codends that are part of this trawl system.
lengthener_mesh_size	smallint	The nominal mesh size (mm) used in the lengthener section of the net.
lengthener_mesh_config	character(1)	Lengthener mesh configuration codes: D = Diamond mesh H = Hexagonal mesh S = Square mesh T = T90 mesh (diamond mesh turned 90 degrees) O = Other.
codend_mesh_size	smallint	The nominal mesh size (mm) used in the codend section of the net.
codend_mesh_config	character(1)	Codend mesh configuration codes: D = Diamond mesh H = Hexagonal mesh S = Square mesh T = T90 mesh (diamond mesh turned 90 degrees) O = Other.
general_features	character varying(12)	Code for each feature present within the trawl system: C = Clump(s) D = Door sensors E = Additional electronics (describe in comments) F = Chafing material on underside of codend H = headline monitor I = Codend window M = Mesh between bridles P = Additional structures on sweeps Q = Additional structures on bridles S = Symmetry sensors T = Catch sensor(s)

		W = Wing weights O = Other.
comments	character varying(512)	Any comments for the described trawl gear.
page_num	smallint	Page number for this trip.
last_page	character(1)	Last page for this trip.

Indexes:
"pk_z_trawl_gear" UNIQUE, btree (trl_gear_key)
"ind_twlgear_trip" btree (trip_number)

Table z_trip_vessel

Comment: Details from MPI (OTR) of trip and vessel details, versioned by date_of_report.

Column	Type	Null?	Description
trip_start	date		The date at the start of the trip.
trip_end	date		The date at the end of the trip.
trip_number	integer	No	Trip identification number issued by the observer group.
vessel_key	numeric(9,0)		The Ministry of Fisheries allocated key for the vessel.
vessel_name	character varying(64)		The name of the vessel.
previous_name	character varying(64)		Previous name of the vessel, if any.
vessel_id	character varying(20)		Identification for a vessel, typically registration number but if vessel is foreign licensed then call_sign is typically used.
call_sign_id	character varying(32)		Radio call sign for the vessel.
msa_number	character varying(32)		NZ Maritime Safety Authority number of the vessel.
lloyds_imo_id	character varying(20)		International Maritime Organisation number assigned by Lloyds Register to the vessel.
flag_nationality	character varying(20)		Flag nationality of the vessel, e.g. NEW ZEALAND, AUSTRALIA, JAPAN etc.
reg_type	character varying(20)		Registration type, e.g. Domestic, Foreign Chartered, Foreign Licensed.
built_year	integer		The year the vessel was built.
overall_length	numeric(7,3)		Overall length of the vessel in metres.
beam_metres	numeric(7,3)		Beam of the vessel in metres.
draught_metres	numeric(7,3)		The draught of the vessel in metres.
gross_tonnes	numeric(9,2)		The gross tonnage of the vessel in tonnes.
engine_kilowatts	numeric(9,3)		Engine power in kilowatts.
freeze_product_yn	character varying(8)		If the vessel has ability to freeze product, Y or N.
meal_processing_yn	character varying(8)		If the vessel has a meal plant, Y or N.
base_region_code_desc	character varying(32)		The name of the region or port where the vessel is based.
max_duration_days	smallint		The maximum duration of a trip for the vessel in days.
max_speed_knots	numeric(7,3)		Maximum speed of the vessel in knots.
total_crew_number	smallint		The maximum total number of crew on the vessel.
concat_target_species	character varying(64)		List of target species expected for the trip.

concat_fmas	character varying(64)		List of FMAs expected to be fished in for the trip.
concat_observers	character varying(128)		List of observers for the trip.
date_of_report	date	No	Date this record was received from MPI.

Indexes:
"pk_z_trip_vessel" PRIMARY KEY, btree (trip_number, date_of_report)

Table z_troll_activities

Comment: Activities from the Trolling Hourly Observation form.

Column	Type	Null?	Description
troll_activity_key	numeric(9,0)	No	System generated key to identify the troll activity.
troll_key	numeric(9,0)		Key for troll hourly form.
trip_number	integer		Trip number for an observed trip.
activity	character varying(3)		Code for any change of activity.
activity_time	time without time zone		Time an activity started (NZST).
details	character varying(256)		Details of the activity.

Indexes:
"pk_z_troll_activities" PRIMARY KEY, btree (troll_activity_key)
Foreign-key constraints:
"fk_z_troll__reference_z_troll_" FOREIGN KEY (troll_key)
REFERENCES z_troll_hourly(troll_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_troll_calibration

Comment: Temperature calibration for troll trips.

Column	Type	Null?	Description
troll_calibration_key	numeric(9,0)	No	System generated key to identify the troll calibration.
trip_number	integer	No	Observer trip number
calibration_date	date	No	The date of calibration
calibration_time	time without time zone		The calibration time
vessel_temperature	numeric(3,1)		The vessel sea surface temperature in degrees Celsius
observer_temperature	numeric(3,1)		The Observers sea surface temperature in degrees Celsius

Indexes:
  "pk_z_troll_calibration" PRIMARY KEY, btree (troll_calibration_key)

Table z_troll_catch

Comment: Troll catch for an observed period.

Column	Type	Null?	Description
troll_catch_key	numeric(9,0)	No	System generated key to identify the troll catch.
troll_key	numeric(9,0)	No	Key for troll hourly form.
trip_number	integer	No	Trip number for an observed trip.
species	character(3)		Species code.
retained	smallint		Number of retained fish for species for period
not_retained	smallint		Number of not retained fish for species for period

Indexes:
"pk_z_troll_catch" PRIMARY KEY, btree (troll_catch_key)
Foreign-key constraints:
"fk_z_troll__reference_z_troll_" FOREIGN KEY (troll_key)
REFERENCES z_troll_hourly(troll_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_troll_configuration

Comment: Details about configuration used on a trolling vessel for a fishing trip.

Column	Type	Null?	Description
troll_config_key	numeric(9,0)	No	System generated key to identify the troll configuration.
trip_number	integer		Trip number for an observed trip.
observer_code	character(5)		First name initial followed by the first three letters of observers surname.
vessel_registration	integer		Registration number of the vessel.
vessel_name	character varying(40)		Name of the vessel.
mainline_material	character(1)		The code for the material that the lines are made of.
mainline_diameter	smallint		The diameter of the mainlines in millimetres.
shock_absorbers	character(1)		Y if shock absorbers were used and an N if shock absorbers not used.
shock_absorber_material	character varying(40)		Material shock absorbers were made of if used.
trace_material	character(1)		The code for the material that the traces are made of.
trace_test	smallint		The nominal breaking strength of the line in pounds (lbs).
trace_length	integer		The average length of the traces in metres.
comments	character varying(512)		
diagram_id	character varying(22)		Location of scanned configuration diagram file.

Indexes:
"pk_z_troll_configuration" PRIMARY KEY, btree (troll_config_key)
Foreign-key constraints:
"fk_z_troll__reference_z_observ" FOREIGN KEY (trip_number)
REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "z_troll_diagram" CONSTRAINT "fk_z_troll__reference_z_troll_" FOREIGN KEY (troll_config_key)
REFERENCES z_troll_configuration(troll_config_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_troll_diagram

Comment: Observer trolling line configuration form diagram.

Column	Type	Null?	Description
troll_diagram_key	numeric(9,0)	No	System generated key for the troll diagram.
troll_config_key	numeric(9,0)		System generated key to identify the troll configuration.
trip_number	integer		Trip number for an observed trip.
line_location	character(1)	No	
line_offset	smallint	No	
line_length	smallint	No	

Indexes:
"pk_z_troll_diagram" PRIMARY KEY, btree (troll_diagram_key)
Foreign-key constraints:
"fk_z_troll__reference_z_troll_" FOREIGN KEY (troll_config_key)
REFERENCES z_troll_configuration(troll_config_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_troll_gear

Comment: Header details, i.e. regarding the vessel and observer from the Observer Trolling Fishing Gear form.

Column	Type	Null?	Description
trip_number	integer	No	Trip number for an observed trip.
observer_code	character(5)		First name initial followed by the first three letters of observers surname.
vessel_registration	integer		The registration number of the vessel.
vessel_name	character varying(40)		The vessel name.
comments	character varying(512)		Any gear comments

Indexes:
  "pk_z_troll_gear" PRIMARY KEY, btree (trip_number)
Foreign-key constraints:
  "fk_z_troll__reference_z_observ" FOREIGN KEY (trip_number)
   REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
  TABLE "z_troll_heads" CONSTRAINT "fk_z_troll__reference_z_troll_" FOREIGN KEY (trip_number)
   REFERENCES z_troll_gear(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "z_troll_hooks" CONSTRAINT "fk_z_troll__reference_z_troll_" FOREIGN KEY (trip_number)
   REFERENCES z_troll_gear(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "z_troll_skirts" CONSTRAINT "fk_z_troll__reference_z_troll_" FOREIGN KEY (trip_number)
   REFERENCES z_troll_gear(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_troll_heads

Comment: Details about heads from Trolling Fishing Gear Form.

Column	Type	Null?	Description
troll_head_key	numeric(9,0)	No	System generated key to identify the troll heads record.
trip_number	integer	No	Trip number for an observed trip.
head_id	character(1)	No	Head id key.
head_weight	numeric(3,1)		Head weight in ounces.
head_length	smallint		Head length mm.
head_shape	character(1)		Head shape code.

Indexes:
"pk_z_troll_heads" PRIMARY KEY, btree (troll_head_key)
Foreign-key constraints:
"fk_z_troll__reference_z_troll_" FOREIGN KEY (trip_number)
REFERENCES z_troll_gear(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_troll_hooks

Comment: Details about hooks from Trolling Fishing Gear Form.

Column	Type	Null?	Description
troll_hook_key	numeric(9,0)	No	System generated key to identify the troll hooks record.
trip_number	integer	No	Trip number for an observed trip.
hook_id	character(1)	No	Identification letter for the hook details.
hook_size	smallint		Hook size tip to shaft, in mm.
hook_type	character(1)		Hook type code.
hook_barbs	character(1)		Whether barbs on hook Yes/No.
hook_material	character(1)		Hook material code.

Indexes:
"pk_z_troll_hks" PRIMARY KEY, btree (troll_hook_key)
Foreign-key constraints:
"fk_z_troll__reference_z_troll_" FOREIGN KEY (trip_number)
REFERENCES z_troll_gear(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_troll_hourly

Comment: Observer Trolling Hourly Observations.

Column	Type	Null?	Description
troll_key	numeric(9,0)	No	Key for troll hourly form.
trip_number	integer		Trip number for an observed trip.
vessel_registration	integer		Width of the grid at its widest point (including the width (mm) of the outer frame).
vessel_name	character(30)		Full name of the vessel.
date_observer	date		Date of the trolling observation.
obs1	character(5)		First initial followed by the first three letters of observers surname.
start_time	time without time zone		Start time of hourly observation.
observed	character(1)		Y if observer gather information or if not N (off shift)
latitude	numeric(5,1)		Vessel latitude (format DDMM.m).
n_s	character(1)		North or South latitude.
longitude	numeric(6,1)		Vessel longitude (format DDDMM.m).
e_w	character(1)		East or West longitude.
fma	character(3)		Fisheries Management Area (FMA) code.
target_species	character(3)		Target species.
lines_fished	smallint		Number of lines being fished.
vessel_speed	numeric(3,1)		Vessel speed in knots.
wind_speed	numeric(3,0)		Wind speed in knots.
wind_dir	character varying(3)		Wind direction eg NE.
sea_state	smallint		Sea state from specification table provided by MFish.
cloud_cover	smallint		Cloud cover as fraction of 8.
surface_temp	numeric(3,1)		Sea surface temperature degrees Celsius.
nonfish	character(1)		Non-fish bycatch during fishing period Y/N.
page_number	smallint		Page number of form.
fishing_end_time	smallint		Fishing end time if the last form of day.
comments	character varying(512)		

Indexes:
"pk_z_troll_hourly" PRIMARY KEY, btree (troll_key)

Foreign-key constraints:
"fk_z_troll__reference_z_observ" FOREIGN KEY (trip_number)
REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "z_troll_activities" CONSTRAINT "fk_z_troll__reference_z_troll_" FOREIGN KEY (troll_key)
REFERENCES z_troll_hourly(troll_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "z_troll_catch" CONSTRAINT "fk_z_troll__reference_z_troll_" FOREIGN KEY (troll_key)
REFERENCES z_troll_hourly(troll_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_troll_skirts

Comment: Details about skirts from Trolling Fishing Gear Form.

Column	Type	Null?	Description
troll_skirt_key	numeric(9,0)	No	System generated key to identify the troll skirts.
trip_number	integer		Trip number for an observed trip.
skirt_id	character(1)	No	Skirt Id key.
material	character(1)		Skirt material code.
skirt_length	smallint		Skirt length mm.
skirt_description	character varying(128)		Description of skirt colour or pattern.

Indexes:
"pk_z_troll_skirts" PRIMARY KEY, btree (troll_skirt_key)
Foreign-key constraints:
"fk_z_troll__reference_z_troll_" FOREIGN KEY (trip_number)
REFERENCES z_troll_gear(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_troll_temperature

Comment: Header details from trolling Temperature Calibration form.

Column	Type	Null?	Description
trip_number	integer	No	Trip number for an observed trip.
observer_code	character(5)		First name initial followed by the first three letters of observers surname.
vessel_registration	integer		The vessel registration number.
vessel_name	character varying(40)		The vessel name.
comments	character varying(512)		Any gear comments.

Indexes:
"pk_z_troll_temp" PRIMARY KEY, btree (trip_number)
Foreign-key constraints:
"fk_z_troll__reference_z_observ" FOREIGN KEY (trip_number)
REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_trw_2007_bio

Comment: Sample weight and method info from the catch and effort logbook 2007 version.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
tow_number	integer		Sequential tow or station number.
userid	character varying(6)		4 character observer code.
fma	character varying(4)		Fisheries Management Area code.
species	character(3)		Species code.
sub_sample_number	integer		Sub-sampling number for species JMM, JMN or JMD. A maximum of four sub-samples per species per tow.
selection_method	character(6)		Sample selection method code. 5 = simple random sample, 9 = whole catch sample.
weighing_method	character(6)		Weighing method code for the type of scales used. 1 = electronic platform, 2 = analogue platform, 3 = analogue hanging, 4 = electronic hanging, 5 = Other.
measurement_method	character(6)		Measurement method code.
sample_weight	numeric(11,3)		Weight (kg) of the sample taken from the catch of the tow.
sample_datetime	timestamp without time zone		The date and time the sample was taken.
no_of_fish_gt_min	character(1)		If number of fish measured is greater than the minimum sample size for the species, Y/N field, used to generate random otolith sample points.
comment	character varying(512)		
grade	character varying(4)		Grade number or code, where sample taken from graded fish. Primarily for Scampi: e.g., 1..5, A,B(tails), J=Jumbo & S=Standard.

Indexes:
"ndx_z_trw_bio_tow" btree (tow_number)
"ndx_z_trw_bio_trp" btree (trip_number)

Table z_trw_2007_green_weights

Comment: Green_weights from the catch and effort logbook 2007 version.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
tow_number	integer		Sequential tow or station number.
species	character varying(9)		Species code.
greenweight	numeric(12,1)		Weight of the species before processing.
method_of_analysis	character varying(22)		Method used to determine greenweight.

Indexes:
"ndx_z_trw_07_grn_wght_spe" btree (species)
"ndx_z_trw_07_grn_wght_tow" btree (tow_number)
"ndx_z_trw_07_grn_wght_trp" btree (trip_number)

Foreign-key constraints:
"fk_z_trw_2007_green_wts_reference" FOREIGN KEY (trip_number, tow_number)
REFERENCES z_trw_2007_observer_station(trip_number, tow_number)

Table z_trw_2007_length

Comment: Length data from the catch and effort logbook 2007 version.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
tow_number	integer		Sequential identifier for each tow.
userid	character varying(6)		4 character observer code.
fma	character varying(6)		Fisheries Management Area code.
species	character varying(6)		Species code.
sub_sample_number	integer		Sub-sampling number for species JMM, JMN or JMD. A maximum of four sub-samples per species per tow.
sample_no	integer		Fish number number identifying a single individual fish.
first_length	integer		Length of the fish in cm.
second_length	integer		Second length of the fish in cm, using a different measurement method than first_length.
sex	character varying(20)		Combination of sex, and stage (females only).
extra_otolith_taken	character(1)		Flag to indicate if the observer chooses to take an otolith from this fish.
shell	character varying(32)		Shell state (e.g. scampi).
first_length_method	character varying(3)		Measurement method for the first_length.
second_length_method	character varying(3)		Measurement method for the second length, if applicable.
grade	character varying(4)		Grade where sample taken on graded fish. Scampi; 1..5, A,B(tails) & Jumbo.
comment	character varying(512)		

Indexes:
  "ndx_z_trw_07_lth_tow" btree (tow_number)
  "ndx_z_trw_07_lth_trp" btree (trip_number)

Table z_trw_2007_observer

Comment: Trip observer(s) from the catch and effort logbook 2007 version.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
observer_name	character varying(50)		Full Name of the observer in <First Name> < Last Name> format.
usercode	character(6)		4 character observer code.
administrator	character(1)		Y/N field.
officer	character(1)		Y/N field.
marked_on_trip	character(1)		Y/N field.

Indexes:
"ndx_z_trw_07_obs" btree (trip_number)
Foreign-key constraints:
"fk_z_trw_2007_observer_reference" FOREIGN KEY (trip_number)
REFERENCES z_trw_2007_trip(trip_number)

Table z_trw_2007_observer_station

Comment: Station data from the catch and effort logbook 2007 version.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
tow_number	integer	No	Sequential identifier for each tow.
fma_code	character varying(7)		Fisheries Management Area code.
target_species	character(3)		Species Code for the species being targeted.
fishing_strategy	character(3)		Two part code to identify fishing strategy the vessel appeared to be using, 1st part codes A..E, U Observer could not tell, 2nd part to identify who shot the net: 0=Fishing master, 1=Captain, 2=1st Officer/Mate, 3=2nd Officer, 4=3rd Officer, 5=other.
gear_code	character(5)		Net identifier (BT = bottom trawl, MW = midwater).
shooting_discharge	character(2)		2 character code for offal discharge and whole fish discharge respectively during shooting.
start_code	character varying(6)		Code to identify the start time and point data.
start_date_time	timestamp without time zone		Date and time at start of tow.
start_latitude_degrees	character varying(5)		Start position latitude (DD).
start_latitude_minutes	character(5)		Start position latitude (MM.m).
start_nth_sth	character(1)		Start position latitude north or south of the equator (N or S).
start_longitude_degrees	character varying(5)		Start position longitude (DDD).
start_longitude_minutes	character(5)		Start position longitude (MM.m).
start_east_west	character(1)		Start position meridian, E or W.
start_groundline_depth	character varying(12)		Distance from the groundline to the sea surface in metres at the start of the tow.
start_seabed_depth	character varying(12)		Depth to seabed at the start of tow in metres.
headline_height	character varying(12)		Vertical opening distance of net in metres.
headline_tag	character varying(12)		Source of headline height: 1=net sonde, 2=standard figure (eg plans), 3=skipper.
doorspread	numeric(4,1)		Horizontal spread of doors from sensors once actively fishing and figure stable.
beaufort_scale	character(2)		Sea conditions at start of tow: beaufort scale

path_of_tow	character varying(32)	Three part code to define type and path of tow. Part 1 refers to bottom or midwater, part 2 refers to configuration e.g. A = straight line, part 3 is the number of turns.
fishing_speed	character varying(12)	Speed of vessel in knots while fishing (trawl speed).
gear_events	character(4)	Codes to indicate that a gear event has occurred. e.g. A = Net torn, B = Net caught/fast, C = Winch failure during setting etc.
during_tow_discharge	character(4)	Two 1 character codes for offal discharge and whole fish discharge respectively during the tow.
end_code	character varying(6)	Code to identify the end time and point recorded.
end_date_time	timestamp without time zone	End date and time.
end_latitude_degrees	character varying(5)	End position latitude (DD).
end_latitude_minutes	character(5)	End position latitude (MM.m).
end_nth_sth	character(1)	End position latitude north or south of the equator (N or S).
end_longitude_degrees	character varying(5)	End position longitude (DDD).
end_longitude_minutes	character(5)	End position longitude (MM.m).
end_east_west	character(1)	End position meridian, E or W.
end_groundline_depth	character varying(12)	Distance from the groundline to the sea surface in metres at the end of the tow.
end_seabed_depth	character varying(12)	Depth to seabed at the end of tow in metres.
net_surface_time	character varying(12)	Time at which the codend of the net was first seen at the surface.
net_onboard_time	character varying(12)	Time at which the net was brought on board or the first fish was emptied from the net onto the deck.
haul_discharge	character(2)	Two 1 character codes for offal discharge and whole fish discharge respectively during the haul.
mitigation_equipment	character(9)	Mitigation equipment codes as 1 or more 2 character codes, e.g. S1 or B1T1 etc.
mitigation_events	character(4)	Mitigation event codes, as 1 or more 1 character codes.
est_surface_greenweight	character varying(12)	Estimated weight of catch when net surfaces (kg).
est_onboard_greenweight	character varying(12)	Estimated weight of catch when net hauled aboard (kg).
fish_loss_subsurface	character varying(12)	Code to identify the type of fish loss below the surface.
fish_loss_surface	character varying(12)	Code to identify the type of fish loss at the surface.
non_fish_bycatch	character varying(12)	Code to show whether any non-fish bycatch (seabird, marine mammal, marine reptile) occurred. Y = Yes, N = No, U = Not observed.

benthic	character varying(12)	Code to show whether any benthic materials came up in the tow. Y = Yes, N = No, U = Not observed.
comment_wght_data	character varying(512)	
comment_tow	character varying(512)	
biosample_count	character varying(12)	For biological sampling: Number of species sampled.
greenweight_sum	integer	Sum of greenweights (kg).
catch_mixed	character varying(16)	Is the catch mixed with another tow.

Indexes:
  "pk_z_trw_2007_observer_station" PRIMARY KEY, btree (trip_number, tow_number)
  "ndx_z_trw_07_stn2" btree (start_date_time)
  "ndx_z_trw_07_stn3" btree (target_species)
Foreign-key constraints:
  "fk_z_trw_2007_station_reference" FOREIGN KEY (trip_number)
   REFERENCES z_trw_2007_trip(trip_number)
Referenced by:
  TABLE "z_trw_2007_green_weights" CONSTRAINT "fk_z_trw_2007_green_wts_reference" FOREIGN KEY (trip_number, tow_number)
   REFERENCES z_trw_2007_observer_station(trip_number, tow_number)

Table z_trw_2007_other_comment

Comment: Comments from the catch and effort logbook 2007 version.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
user_id	character varying(6)		4 character observer code.
tow_range	character varying(12)	No	The number of the first and the last tow that this record applies to. P refers to Part tows.
comment	character varying(512)		

Indexes:
  "pk_z_trw_2007_oth_comm" PRIMARY KEY, btree (trip_number, tow_range)
  "ndx_z_trw_07_other_com" btree (trip_number)
Foreign-key constraints:
  "fk_z_trw_2007_other_comm_ref" FOREIGN KEY (trip_number)
   REFERENCES z_trw_2007_trip(trip_number)

Table z_trw_2007_other_fish

Comment: Other fish data from the catch and effort logbook 2007 version.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
applicable_tows	character varying(12)		The number of the first and the last tow that this record applies to. P refers to Part tows, e.g. 31P.
species	character(3)		Species code.
type	character varying(6)		Code for what happened to the fish. e.g. OIL = Used for oil, DIS = Discarded, MEA = Mealed etc.
greenweight	numeric(10,0)		The greenweight of whole fish discarded or mealed etc.
method_of_analysis	character(6)		Indicates the location and methods used to assess the weight for each species by use of a three-part code. First part - The location of the catch at the time of analysis. Second part - Method used for analysis.

Indexes:
"ndx_z_trw_07_other" btree (trip_number)

Table z_trw_2007_process_comment

Comment: Processed weights from the catch and effort logbook 2007 version comments.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
user_id	character(6)		4 character observer code.
tow_range	character(12)	No	The number of the first and the last tow that this record applies to. P refers to Part tows.
comment	character varying(512)		

Indexes:
"pk_z_trw_2007_process_comment" PRIMARY KEY, btree (trip_number, tow_range)

Table z_trw_2007_processed

Comment: Processed weights from the catch and effort logbook 2007 version.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
applicable_tows	character varying(12)		The number of the first and the last tow that contributed fish to this processed catch. P refers to part tows.
species	character(3)		Species code.
processed_state	character varying(6)		The code for the processed state.
grade	character varying(12)		The grade the vessel applies to the products (e.g. S, M, L etc).
processed_units	integer		The number of processed units, e.g. cartons/trays/bags/blocks etc.
processed_units_tag	character varying(12)		A tag which identifies whether the count was done by the vessel or by the observer: 2 = count by observer, 3 = daily vessel count, 4 = tow by tow vessel count.
unit_weight	numeric(10,1)		The weight of that particular unit in kilograms. Generally an average weight.
unit_weight_tag	character varying(12)		A tag which identifies whether the unit weights were determined by the vessel or by the observer: 1 = vessel weight, 2 = observer derived weight.
conversion_factor	numeric(6,3)		The conversion factor (CF) used to back-calculate to greenweight.
conversion_factor_tag	character varying(12)		A tag which identifies the source of the conversion factor (CF) used: 3 = Observer derived trip-specific CF, 4 = Official gazetted CF, 5 = Official Vessel Specific CF.

Indexes:
  "ndx_z_trw_07_proc" btree (trip_number)
Foreign-key constraints:
  "fk_z_trw_2007_processed_ref" FOREIGN KEY (trip_number)
   REFERENCES z_trw_2007_trip(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_trw_2007_samples

Comment: Sample data from the catch and effort logbook 2007 version.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
tow_number	integer		Sequential identifier for each tow.
sample_no	integer		Fish number number identifying a single individual fish.
userid	character varying(6)		4 character observer code.
fma	character(6)		Fisheries Management Area code.
species	character(3)		Species code.
sheduled_sample_status	character(20)		Records why the otolith was taken. Scheduled = otolith was either randomly chosen by the computer or chosen because this species has specific sampling requirements. Re-scheduled = a scheduled sample was not taken so the computer identifies another fish which should be sampled, Extra = the observer choose to take an otolith from this fish.
otolith_taken	character(1)		Flag to indicate otoliths were taken from this fish.
first_length	integer		Length of the fish in cm.
second_length	integer		Second length of the fish in cm, using a different measurement method than first_length.

Indexes:
"ndx_z_trw_samples_tow" btree (tow_number)
"ndx_z_trw_samples_trp" btree (trip_number)

Table z_trw_2007_trip

Comment: Trip data from the catch and effort logbook 2007 version.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
fishing_method	character varying(20)		Fishing method, e.g. Trawling.
target_species	character(6)		Species code for the main target species for this trip.
vessel_name	character varying(30)		The full name of the vessel.
registration	character varying(20)		Registration number of the vessel.
nationality	character varying(20)		Nationality of the vessel, based on officers and crew nationality.
start_date	date		Start date of the trip.
end_date	character varying(12)		Last arrival date for the trip.
psi	character(1)		If there were protected species interaction(s) for this trip (Y/N).
userid	character varying(12)		4 character observer code.
data_date_time	timestamp(6) without time zone		

Indexes:
"pk_z_trw_2007_trip" PRIMARY KEY, btree (trip_number)
Referenced by:
TABLE "z_trw_2007_observer" CONSTRAINT "fk_z_trw_2007_observer_reference" FOREIGN KEY (trip_number)
REFERENCES z_trw_2007_trip(trip_number)
TABLE "z_trw_2007_other_comment" CONSTRAINT "fk_z_trw_2007_other_comm_ref" FOREIGN KEY (trip_number)
REFERENCES z_trw_2007_trip(trip_number)
TABLE "z_trw_2007_processed" CONSTRAINT "fk_z_trw_2007_processed_ref" FOREIGN KEY (trip_number)
REFERENCES z_trw_2007_trip(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "z_trw_2007_observer_station" CONSTRAINT "fk_z_trw_2007_station_reference" FOREIGN KEY (trip_number)
REFERENCES z_trw_2007_trip(trip_number)

Table z_trw_2007_trip_20190902

Comment: Trip data from the catch and effort logbook 2007 version.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
fishing_method	character varying(20)		Fishing method, e.g. Trawling.
target_species	character(6)		Species code for the main target species for this trip.
vessel_name	character varying(30)		The full name of the vessel.
registration	character varying(20)		Registration number of the vessel.
nationality	character varying(20)		Nationality of the vessel, based on officers and crew nationality.
userid	character varying(12)		4 character observer code.
data_date_time	timestamp without time zone		
start_date	date		Start date of the trip.
end_date	character varying(12)		

Indexes:
"pk_z_trw_2007_trip_20190902" PRIMARY KEY, btree (trip_number)

Table z_trw_new_observer_greenweight

Comment: For each tow landed on the vessel, greenweights for each species are estimated. These estimates are recorded in the new_observer_greenweight, which records the trip and station number, the group number, species, estimated greenweight, and codes describing how the greenweight was estimated. This table covers the period between 1990 and 2007, the earlier information is recorded in observer_greenweight.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
group_number	integer		Sequential number for a group (by tow daily) of processed records.
tow_number	integer	No	Sequential identifier for each tow.
species	character(3)	No	Species Code for the estimated greenweight.
species_weight	numeric(11,3)		Greenweight of species caught in kilograms.
greenweight_calc_method	character(4)		Method used to establish greenweight (see logbook instructions).

Indexes:
"species_indx" btree (species)
"tow_no_indx" btree (tow_number)
"trip_grp_indx" btree (group_number)
"trip_numb_indx" btree (trip_number)

Table z_trw_new_observer_proc_summ

Comment: Summary data for all processed fish products for a species by process group, i.e., a summary of the records held in new_observer_processed, since May 1990.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
processing_date	date		Date on which processing took place.
tows_number	integer		Number of tows covered by processed catch.
meal_produced	numeric(11,3)		Weight of meal produced in kilograms.
oil_produced	numeric(9,3)		Amount of fish oil produced in litres.
total_calc_greenweight	numeric(11,3)		Sum of calculated_greenweights in kilograms.

Indexes:
  "proc_sum_group_no_indx" btree (group_number)
  "proc_sum_trip_no_indx" btree (trip_number)
Foreign-key constraints:
  "fk_z_trw_new_observer_proc_summ" FOREIGN KEY (trip_number)
   REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_trw_new_observer_processed

Comment: Details of processed fish products by species, as recorded in the catch and effort logbook since May 1990. +

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
species	character(3)		Species Code for the processed weight summary recorded.
processed_state	character(4)		Code to identify the state to which the fish has been processed to.
grade_code	character(4)		Code to identify the grade code of the product.
processed_weight	numeric(11,3)		Calculated processed weight in kilograms as number_of_units * unit_weight.
units_number	integer		Number of cartons/trays/bags produced for that species, state and grade.
unit_number_tag	smallint		A tag which identifies whether the number of units was determined by the vessel or by the observer: 1 = vessel count, 2 = observer count.
unit_weight	numeric(6,2)		The weight of that particular unit.
unit_weight_tag	smallint		A tag which identifies whether the unit weight was determined by the vessel or by the observer: 1 = vessel weight, 2 = observer derived weight.
conversion_factor	numeric(7,4)		Conversion factor applied to processed product to get weight of fish processed.
con_factor_tag	smallint		Code to identify which conversion factor was used (see logbook instructions).
other_product_code	character(4)		Code to identify other products (see logbook instructions).
other_product_weight	numeric(11,3)		Weight of other product produced in kilograms.
fish_mealed_greenweight	numeric(11,3)		The greenweight of fish mealed in kilograms.
meal_method_code	character(2)		Code to identify method of analysis of fish mealed (see logbook instructions).
fish_discarded_greenweight	numeric(11,3)		The greenweight of fish discarded in kilograms.
discard_method_code	character(2)		Code to identify method of analysis of fish discarded (see logbook instructions).
calculated_greenweight	numeric(11,3)		Calculated greenweight based on number_of_units * unit_weight * conversion_factor in kilograms.

Indexes:
  "proc_group_number_indx" btree (group_number)
  "proc_species_indx" btree (species)
  "proc_trip_number_indx" btree (trip_number)

Table z_trw_new_observer_station

Comment: Station data from the catch and effort logbook since 1997.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
group_number	integer		Sequential number for a group (by tow daily) of processed records.
tow_number	integer	No	Sequential identifier for each tow.
start_date	date		Date at start of tow.
target_species	character(3)		Species Code for the species being targeted.
gear_code	character(5)		Net identifier (BT = bottom trawl, MW = midwater).
headline_height	numeric(4,1)		Vertical opening distance of net in metres.
fma_code	character(7)		Fisheries Management Area associated with the tow.
path_of_tow	character(3)		Three part code to define type and path of tow. Part 1 refers to bottom or midwater, part 2 refers to configuration e.g. A = straight line, part 3 is the number of turns.
fishing_on_marks	smallint		Code to identify fishing on marks.
fishing_on_marks_1	smallint		Code to identify whether the vessel was actively targeting fish sign: \r 0 = No, 1 = Yes.\r First character of fishing_on_marks prior to 1990.
fishing_on_marks_2	smallint		Code to identify who shot the net (Coding structure made up by Observers)\r Previously second character of Fishing_on_marks_code.
start_time	integer		Start time (24 hour format).
start_time_code	character(4)		Code to identify what the start time refers to (see logbook instructions).
start_latitude	numeric(5,1)		Start position latitude (DDMM.m).
start_longitude	numeric(6,1)		Start position longitude (DDDMM.m).
start_east_west	character(1)		Start position meridian, E or W.
start_groundline_depth	integer		Depth to headline at the start of tow in metres.
start_bottom_depth	integer		Depth to seabed at the start of tow in metres.
surface_temperature	numeric(3,1)		Sea surface temperature (decimal degrees C).
headline_temperature	numeric(3,1)		Sea temperature at the headline (degrees).
fishing_speed	numeric(3,1)		Speed of vessel in knots while fishing (trawl speed).
period_not_fishing	integer		Duration between start and end-time when net not fishing (hr and min HHMM).

end_time	integer	End time (24 hour format).
end_time_code	character(4)	Code to identify the type of end time recorded.
end_latitude	numeric(5,1)	End position latitude (DDMM.m).
end_longitude	numeric(6,1)	End position longitude (DDDMM.m).
end_east_west	character(1)	End position meridian, E or W.
end_groundline_depth	integer	Depth to headline at the end of the tow in metres.
end_bottom_depth	integer	Depth to seabed at the end of tow in metres.
total_surface_greenweight	integer	Total weight of catch when net surfaces (kg).
total_board_greenweight	integer	Weight of catch when net hauled aboard in kilograms.This will equal total_greenweight_on_surface unless fish are lost from the net.
greenweight_method	character(4)	Code to identify method used to determine total greenweight on board.
fish_loss_code	character(2)	
fish_loss_1_code	smallint	Code to identify the type of fish loss below the surface. Previously first character of Fish Loss Code.
fish_loss_2_code	smallint	Code to identify the type of fish loss at the surface or on the ramp.\r Previously second character of Fish Loss Code.
length_frequency_yn	character(1)	Whether length frequency (biological data) collected from this tow.

Indexes:
  "pk_z_trw_new_observer_station" PRIMARY KEY, btree (trip_number, tow_number)
  "ndx_z_trw_ne_ob_st1" UNIQUE, btree (trip_number, group_number, tow_number)
  "ndx_z_trw_ne_ob_st2" btree (start_date)
  "ndx_z_trw_ne_ob_st3" btree (target_species)
Foreign-key constraints:
  "fk_z_trw_new_observer_station" FOREIGN KEY (trip_number)
   REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_trw_observer_greenweight

Comment: For each tow landed on the vessel, greenweights for each species are estimated. These estimates are recorded in the observer_greenweight, which records the trip and station number, the group number, species, estimated greenweight, and codes describing how the greenweight was estimated.+

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
tow_number	integer	No	Sequential identifier for each tow.
species	character(3)	No	Species Code for the estimated greenweight.
species_weight	numeric(11,3)		Greenweight of species caught in kilograms.
greenweight_calc_method	character(4)	No	Code to identify the method used to establish greenweight (see logbook instructions).

Indexes:
"group_number_indx" btree (group_number)
"species_code_indx" btree (species)
"tow_numb_indx" btree (tow_number)
"tow_number_indx" btree (tow_number)
"trip_number_indx" btree (trip_number)
Foreign-key constraints:
"fk_z_trw_observer_greenweight" FOREIGN KEY (trip_number, tow_number)
REFERENCES z_trw_observer_station(trip_number, tow_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_trw_observer_proc_calc

Comment: Summary data for each species in observer_processed (only up to April 1990).

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
species	character(3)	No	Species Code for the processed weight summary recorded.
fish_mealed_greenweight	numeric(11,3)		The greenweight of fish mealed in kilograms.
meal_method_code	character(4)		Code to identify method of analysis of fish mealed (see logbook instructions).
discard_method_code	character(4)		Code to identify the method of analysis of fish discarded (see logbook instructions).
calculated_greenweight	numeric(11,3)		Calculated greenweight in kilograms as number_of_units * unit_weight * conversion_factor.
fish_discarded	integer		

Indexes:
"proc_calc_group_indx" btree (group_number)
"proc_calc_species_indx" btree (species)
"proc_calc_trip_indx" btree (trip_number)

Table z_trw_observer_proc_summary

Comment: Summary data for all processed fish products for a species by process group, i.e., a summary of the records held in observer_processed, from 1986 to April 1990.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
log_number	integer		Unique number printed on the logbook.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
meal_produced	numeric(11,3)		Weight of meal produced in kilograms.
oil_produced	numeric(9,3)		Amount of fish oil produced in litres.
discard_species1_code	character(3)		Species code of first discarded species.
discard_species2_code	character(3)		Species code of second discarded species.
total_fish_mealed	numeric(11,3)		Total greenweight of fish mealed in kilograms
total_fish_discarded	numeric(11,3)		Total greenweight of fish discarded in kilograms.
total_calc_greenweight	numeric(11,3)		Sum of calculated_greenweights in kilograms.

Indexes:
"pk_z_trw_observer_proc_summary" PRIMARY KEY, btree (trip_number, group_number)

Table z_trw_observer_processed

Comment: Details of processed fish products by species, as recorded in the catch and effort logbook from 1986 to April 1990. +

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
species	character(3)	No	Species Code for the processed weight recorded.
processed_state	character(4)	No	Code to identify the state to which the fish has been processed to.
processed_weight	numeric(11,3)		Total processed weight for the Trip / Group / Species combination. Only used for a few trips.
units_number	integer		Number of cartons/trays/bags produced for that species, state and grade.

Indexes:
"proc_group_no_indx" btree (group_number)
"proc_specie_indx" btree (species)
"proc_trip_no_indx" btree (trip_number)

Table z_trw_observer_station

Comment: Station data from the catch and effort logbook until 1997.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the SOP.
log_number	integer		Unique number printed on the logbook.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
tow_number	integer	No	Sequential identifier for each tow.
start_date	date		Date at start of tow.
target_species	character(3)		Species Code for the species being targeted.
gear_code	character(5)		Net identifier (BT = bottom trawl, MW = midwater).
headline_height	numeric(4,1)		Vertical opening distance of net in metres.
fishing_on_marks	integer		Code to identify fishing on marks.
start_time	integer		Start time (24 hour format).
start_latitude	numeric(5,1)		Start position latitude (DDMM.m).
start_longitude	numeric(6,1)		Start position longitude (DDDMM.m).
start_east_west	character(1)		Start position meridian, E or W.
start_headline_depth	integer		Depth to headline at the start of tow in metres.
start_bottom_depth	integer		Depth to seabed at the start of tow in metres.
surface_temperature	numeric(3,1)		Sea surface temperature (decimal degrees C).
headline_temperature	numeric(3,1)		Sea temperature at the headline (decimal degrees C).
fishing_speed	numeric(3,1)		Speed of vessel in knots while fishing (trawl speed).
period_not_fishing	integer		Duration between start and end-time when net not fishing (hr and min HHMM).
path_of_tow	character(3)		Configuration of tow as per logbook instructions
end_time	integer		End time (24 hour format).
end_latitude	numeric(5,1)		End position latitude (DDMM.m).
end_longitude	numeric(6,1)		End position longitude (DDDMM.m).
end_east_west	character(1)		End position meridian, E or W.
end_headline_depth	integer		Depth to headline at the end of tow in metres.
end_bottom_depth	integer		Depth to seabed at the end of tow in metres.
total_surface_greenweight	integer		Total weight of catch when net surfaces (kg).

total_board_greenweight	integer	Weight of catch when net hauled aboard (in kilograms). This will equal total_greenweight_on_surface unless fish are lost from the net.
greenweight_method	character(4)	Code to identify method used to determine total greenweight on board.
fish_loss_code	character(4)	Code to identify the type of fish loss (see logbook instructions).

Indexes:
"pk_z_trw_observer_station" PRIMARY KEY, btree (trip_number, tow_number)
"ui_z_trw_observer_station" UNIQUE, btree (trip_number, group_number, tow_number)
"ndx_z_trw_ob_st2" btree (start_date)
"ndx_z_trw_ob_st3" btree (target_species)
Foreign-key constraints:
"fk_z_trw_ob_z_obs_tri_z_observ" FOREIGN KEY (trip_number)
REFERENCES z_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "z_trw_observer_greenweight" CONSTRAINT "fk_z_trw_observer_greenweight" FOREIGN KEY (trip_number, tow_number)
REFERENCES z_trw_observer_station(trip_number, tow_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_vme_catch

Comment: Vulnerable Marine Ecosystem Evidence Process, relevant taxonomic groups, weights, and scores.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
tow_number	character varying(3)	No	Tow or set number that caught the benthic material.
species	character varying(3)	No	Species code as printed on the VME form.
catch_weight_method_code	character varying(1)		Code for the method of obtaining the weight for this taxonomic group: 1 = Electronic platform scales 2 = Analogue platform scales 3 = Salter scales 4 = Electronic hanging scales 5 = Other weighing method or estimate of weight.
catch_weight	character varying(8)		The weight of material of the specified taxon to two decimal places if possible.
threshold_limit	character varying(1)		"Y" if the weight is greater than the threshold weight (in kilograms).
weight_limit	character varying(1)		"Y" if the weight is greater than the weight limit but not greater than the threshold limit.

Indexes:
  "z_vme_catch_pkey" PRIMARY KEY, btree (trip_number, tow_number, species)
Foreign-key constraints:
  "z_vme_catch_fk1" FOREIGN KEY (trip_number, tow_number)
   REFERENCES z_vme_station(trip_number, tow_number) ON DELETE CASCADE

Table z_vme_station

Comment: Vulnerable Marine Ecosystem Evidence Process, trip and tow information.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
tow_number	character varying(3)	No	Tow or set number that caught the benthic material.
obs1	character varying(5)		Observer code for the first observer. The first letter of first name followed by the first three letters of last name (unless your unique code is different).
obs2	character varying(5)		Observer code for the second observer. Same rule as the first observer code.
vessel_master	character varying(40)		The name of the vessel master, first name followed by surname.
start_date	character varying(10)		The date on which the net reaches target depth.
start_time	character varying(4)		The time at which net reaches target depth (24 hour format).
start_depth	character varying(4)		The groundline depth in metres at which the net reached the target depth.
start_latitude	character varying(6)		The vessel latitude degrees at the point at which net reaches target depth.
start_north_south	character varying(1)		Start latitude hemisphere South (S), as preprinted on the form.
start_longitude	character varying(7)		The vessel longitude degrees at the point at which net reaches target depth.
start_east_west	character varying(1)		Start position meridian, E or W.
end_date	character varying(10)		The date on which the net leaves target depth.
end_time	character varying(4)		The time at which net leaves target depth (24 hour format).
end_depth	character varying(4)		The groundline depth in metres at which the net left the target depth.
end_latitude	character varying(6)		The vessel latitude degrees at the point at which net leaves target depth.
end_north_south	character varying(1)		End latitude hemisphere South (S), as preprinted on the form.
end_longitude	character varying(7)		The vessel longitude degrees at the point at which net leaves target depth.
end_east_west	character varying(1)		End position meridian, E or W.
person_in_charge	character varying(40)		The name of the person who signed this form if he/she is not the vessel master.
form_received_by_vessel_date	character varying(10)		The date the person in charge received the form (New Zealand Standard Time).
form_received_by_vessel_time	character varying(4)		The time the person in charge received the form (New Zealand Standard Time, 24 hour format).
form_version	character varying		Version of the VME form.
comments	character varying(200)		Comment on the VME form.

Indexes:

"z_vme_station_pkey" PRIMARY KEY, btree (trip_number, tow_number)

Referenced by:
TABLE "z_vme_catch" CONSTRAINT "z_vme_catch_fk1" FOREIGN KEY (trip_number, tow_number)
REFERENCES z_vme_station(trip_number, tow_number) ON DELETE CASCADE

Table z_warp_scarer

Comment: Warp scarer details form.

Column	Type	Null?	Description
wpsr_key	numeric(9,0)	No	warp scarer key.
trip_number	integer	No	Trip number for an observed trip.
equipment_code	character varying(3)	No	Equipment code consisting of the letter W plus a number. Each warp scarer measured during the trip is numbered from 1 onwards.
obs1	character(5)		First initial followed by the first three letters of observers surname involved in the measurement of the device.
obs2	character(5)		As for obs 1
measure_date	date		Date that the measurements were made.
measure_reason	character(1)		Code to explain why this measurement was taken: I = Initial measurement D = description of the device in a Damaged state R = measurement of the device after it has been Repaired O = some Other reason for this measurement.
measure_type	character varying(3)		Full to indicate that this is a full record of measurements. If changes then Partial and an Equipment code (eg W1) of the Warp Scarer that has been altered entered.
based_on	character varying(3)		Where a Partial measurement the Equipment Code (eg W1) of the Warp Scarer that has been altered.
attachment_point	character(1)		The location of the point of attachment: P = Port side warp, S = Starboard side warp, C = Central warp, O = some other point used as a reference point.
mainline_diameter	smallint		The diameter of the mainline used (in millimetres) rounded down to the nearest millimetre.
tow_object	character(1)		Type of towed object: A = Chain C = Clip

		D = Shackle F = inverted funnel or plastic cone L = length of thick line K = knot or loop of thick line B = buoy N = netted buoy H = Hook W = weight Z = no towed object O = other type of towed object.
object_weight	numeric(4,2)	Weight in kilograms.
connector_type	character(1)	Type of connector eg C=Clip.
connector_number	smallint	The number of connectors holding mail line to warp.
streamer_number	smallint	Streamer number.
streamer_max_gap	numeric(4,2)	The largest gap from one streamer to the next, in metres.
streamer_min_branches	smallint	The minimum number of branches on any streamer on the line.
streamer_max_branches	smallint	The maximum number of branches on any streamer on the line.
streamer_min_length	numeric(4,2)	The minimum length of any branch of any streamer on the line, in metres.
streamer_max_length	numeric(4,2)	The maximum length of any branch of any streamer on the line, in metres.
streamer_min_dia	numeric(4,2)	The minimum diameter of any branch of any streamer on the line (in millimetres).
streamer_max_dia	numeric(4,2)	The maximum diameter of any branch of any streamer on the line (in millimetres).
extent_distance	numeric(3,1)	Estimate of the extent (distance) or coverage of the warp scarer.
material_max_gap	smallint	Maximum gap visible in materials.
mainline_visible_min_lgth	smallint	Minimum length of the visible to the nearest mm.
mainline_visible_max_lgth	smallint	Maximum length of the visible to the nearest mm.
colours	character varying(8)	All the different streamer colours observed: P pink R red C carrot (orange) Y yellow G green

		B blue W brown F faded colour (any colour) O other.
materials	character varying(8)	Code for all the different streamer materials observed: T plastic tubing S plastic strapping O other.
comments	character varying(300)	Comments
page_num	smallint	Page number for this trip.
last_page	character(1)	Last page for this trip.

Indexes:
"pk_z_warp_scarer" PRIMARY KEY, btree (wpsr_key)

Table z_warp_strike

Comment: Seabird warp-strike observations (trawl) - Fishing event descriptors.

Column	Type	Null?	Description
stn_key	integer	No	Station key, based on trip_number * 1000 + station_number.
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	Sequential number for each station (tow).
tcepr_number	integer		TCEPR form number for the tow.
tcepr_tow	smallint		Shot number on the TCEPR form.
tow_date	date		Date at start of the tow.
tow_start_time	integer		Start time of the tow.
time_code	character(2)		Time code as defined in the observer catch effort logbook instructions.
tow_end_time	integer		End time of the tow (hhmm format).
meal_plant	character(1)		Meal plant onboard the vessel (Y or N).
meal_plant_on	character(1)		Meal plant running during the tow (Y or N).
percent_observed	smallint		The percentage of pound emptying observed.
comments_tow	character varying(560)		Comment for the tow or relating to a sampling period that was not sampled.

Indexes:
  "pk_z_warp_strike" PRIMARY KEY, btree (stn_key)
Referenced by:
  TABLE "z_warp_strike_capture" CONSTRAINT "fk_z_warp_strike_capture_ref" FOREIGN KEY (stn_key)
   REFERENCES z_warp_strike(stn_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "z_warp_strike_sample" CONSTRAINT "fk_z_warp_strike_sample_ref" FOREIGN KEY (stn_key)
   REFERENCES z_warp_strike(stn_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_warp_strike_capture

Comment: Numbers of seabirds recovered from the whole tow.

Column	Type	Null?	Description
bcap_key	integer	No	System generated primary key to identify bird capture records.
stn_key	integer	No	
recov_from	character(1)		Code for where birds were recovered from, W = Warp, N = Net, M = Mitigation device, U = Unknown.
status	character(1)		Code for status: D = dead, I = injured, A = non injured, U = Unknown when no observation was made.
size	character(1)		Code for bird size: L = Large, S = Small, N = Not recorded (pre 18/01/2006 forms).
bird_count	smallint		Number of birds recovered.

Indexes:
  "pk_z_warp_strike_capture" PRIMARY KEY, btree (bcap_key)
  "ndx_z_warp_strike_capt_stn" btree (stn_key)
Foreign-key constraints:
  "fk_z_warp_strike_capture_ref" FOREIGN KEY (stn_key) REFERENCES z_warp_strike(stn_key)
   ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_warp_strike_device

Comment: Details of mitigation devices or methods used during an observation sampling period.

Column	Type	Null?	Description
desc_key	integer	No	System generated key of the warp strike device.
sample_key	integer	No	System generated key of the warp strike sample.
d_type	character varying(20)		Device type code.
d_length	integer		Length parameter of the device.
d_height	integer		Height parameter of the device.
streamers	integer		Number of streamers.
d_complete	character(1)		Device complete flag, Y = Yes, N = No, U = Unknown.
deploy_sides	character(1)		Sides device deployed on, P = Port, S = Starboard, B = Both, N = Neither.

Indexes:
  "pk_z_warp_strike_device" PRIMARY KEY, btree (desc_key)
Foreign-key constraints:
  "fk_z_warp_strike_device_ref" FOREIGN KEY (sample_key)
   REFERENCES z_warp_strike_sample(sample_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table z_warp_strike_sample

Comment: Fifteen minute seabird warp/mitigation device strike observations and bird abundance data.

Column	Type	Null?	Description
sample_key	integer	No	System generated key of the warp strike sample.
stn_key	integer	No	
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	Sequential number for each station (tow).
sample_number	smallint	No	Sampling period number for the tow.
side_observed	character(1)		Which warp or side was observed during the observation period, P=Port, S=Starboard, C=Central.
observed_item	character(2)		Code for trawl warp (TW) or mitigation device (MD) or both (TM) observed during the sampling period.
large_birds	integer		The large bird abundance count just before the sampling period.
small_birds	integer		The small bird abundance count just before the sampling period.
large_range	smallint		Code for range of large bird abundance for sampling period number 0 = 0, 1 = 1-9, 2 = 10-100, 3 = >100.
small_range	smallint		Code for range of small bird abundance for sampling period number 0 = 0, 1 = 1-9, 2 = 10-100, 3 = >100.
time_start	integer		Start time for the sampling period.
time_end	integer		End time for the sampling period.
contacts_large	smallint		Number of large birds coming into heavy contact with the observed trawl warp (or mitigation device) during the sampling period.
contacts_small	smallint		Number of small birds coming into heavy contact with the observed trawl warp (or mitigation device) during the sampling period.
tori_line	character(1)		Tori line used: Y = Yes (to specification), N = No, X = Yes but not to specification.
warp_scarer	character(1)		Warp scarer used: Y = Yes (to specification), N = No, X = Yes but not to specification.
bird_baffler	character(1)		Bird baffler used: Y = Yes (to specification), N = No, X = Yes but not to specification.

sonic_scarer	integer	Number of times a high frequency sonic device was activated during the sampling period, 0 = not used or not present.
gas_canon	integer	Number of times a gas canon was activated during the sampling period, 0 = not used or not present.
other_desc	character varying(20)	Other mitigation description.
sprags_port	character(1)	Sprags on the port side warp, Y = Yes, N = No, U = Unknown.
sprags_starboard	character(1)	Sprags on the starboard side warp, Y = Yes, N = No, U = Unknown.
grease	character(1)	Grease on warps, P = Port, S = Starboard, B = Both, N = Neither/None.
swell_ht	numeric(3,2)	Swell height (m).
swell_dir	smallint	Swell direction, in 12 point "clock scale". The bow of the vessel is defined as 12, the stern 6 etc.
wind_spd	smallint	Wind speed on the beaufort scale.
wind_dir	smallint	Wind direction , in 12 point "clock scale". The bow of the vessel is defined as 12, the stern 6 etc.
discharge_side	character(1)	Discharge side for offal, P=Port, S=Starboard, B=Both, N=Neither.
discharge_rate	character(1)	Rate of offal or discard discharge, 0 = none, 1 = negligible, 2 = intermittent, 3 = continuous.
discharge_type	character varying(5)	Type of discharges, S = Sump water, M = Minced & macerated, C = Cutter pump, O = Offal meaning heads and guts, D = Discards of whole fish.
obs_initials	character(2)	Observers initials.
comments	character varying(600)	

Indexes:
  "pk_z_warp_strike_sample" PRIMARY KEY, btree (sample_key)
Foreign-key constraints:
  "fk_z_warp_strike_sample_ref" FOREIGN KEY (stn_key) REFERENCES z_warp_strike(stn_key)
   ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
  TABLE "z_mitigation_event" CONSTRAINT "fk_z_mitigation_event__z_warp_strike_s" FOREIGN KEY (sample_key)
   REFERENCES z_warp_strike_sample(sample_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "z_warp_strike_device" CONSTRAINT "fk_z_warp_strike_device_ref" FOREIGN KEY (sample_key)
   REFERENCES z_warp_strike_sample(sample_key) ON UPDATE RESTRICT ON DELETE RESTRICT

5.2 Stage tables (prefixed ‘y’)

Table y_all_other_fish

Comment: All other fish data from the catch and effort logbook 2007 version.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
tow_range	character varying(12)		The number of the first and the last tow that this record applies to. P refers to Part tows, e.g. 31P.
min_tow	smallint		Minimum tow extracted from the tow range.
max_tow	smallint		Maximum tow extracted from the tow range.
species	character(3)		Species code.
type	character varying(6)		Code for what happened to the fish. e.g. OIL = Used for oil, DIS = Discarded, MEA = Mealed etc.
greenweight	numeric(10,0)		The greenweight of whole fish discarded or mealed etc.
location_of_analysis	character(1)		The location of the catch at the time of analysis to determine the greenweight.
loc_of_analysis_lookup_key	numeric(9,0)		System generated lookup key associated with the location_of_analysis.
method_analysis	character varying(3)		The method used to determine the greenweight.
method_analysis_lookup_key	numeric(9,0)		System generated lookup key associated with the method_analysis.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
other_fish_detail_key	numeric(9,0)	No	System generated key to identify the other fish detail.
other_fish_event_key	numeric(9,0)		System generated key to join to all other fish comment.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date		Date this row was created.

Indexes:
  "pk_y_all_other_fish" PRIMARY KEY, btree (other_fish_detail_key)
  "ndx_y_all_other_fish_trip" btree (trip_number)

Table y_all_other_fish_comment

Comment: Comment from the catch and effort logbook 2007 version.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
of_group	integer		System generated Other Fish group.
tow_range	character varying(12)		The number of the first and the last tow that this record applies to. P refers to Part tows, e.g. 31P.
comment	character varying(512)		
trip_key	numeric(9,0)		System generated trip key to identify the trip.
other_fish_event_key	numeric(9,0)	No	System generated unique key to identify the all other fish comment.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date		Date this row was created.

Indexes:
"pk_y_all_other_fish_comment" PRIMARY KEY, btree (other_fish_event_key)
"ndx_y_all_other_com" btree (trip_number)

Table y_benthic

Comment: Benthic Materials stage details table.

Column	Type	Null?	Description
fishing_event_catch_key	numeric(10,0)	No	System generated unique key to identify a fishing catch record.
trip_number	integer		Trip number for an observed trip.
station_number	smallint		Station number is a sequential identifier of each tow or set of a trip.
sample_id	character varying(8)		Sequential number for each individual item or specimen recorded on Benthic Form during the trip.
species_obs	character(3)		The species code used on the Observer Benthic Material Form.
end_type	character(3)		End destination of the material on vessel: ACC = Accidentally lost ALI = Discarded alive (likely to survive) DIS = Discarded dead MEA = Used for meal EAT = Taken to galley RET = Retained by observer RDI = Sample retained by observer, remainder discarded PRO =Processed by vessel.
end_type_lookup	numeric(9,0)		System generated unique key associated with the end_type.
catch_weight	numeric(11,3)		The weight of the benthic material recorded for the sample, to nearest 1 kg or 0.1kg depending on scale used.
adjusted_weight	numeric(11,3)		The species weight adjusted for more than one species if applicable.
location_analysis	character(1)		Weight method - location part.
location_analysis_lookup	numeric(9,0)		System generated unique key associated with the location_analysis.
method_analysis	smallint		The method of analysis of weight.
method_analysis_lookup	numeric(9,0)		System generated unique key associated with the method_analysis.
life_status	character(1)		Life status of the benthic material when it was freshly caught: 1 = Appeared Alive 2 = Non - biological or Dead (showing no signs of life) 3 - Do not use 4 = Decomposing

		5 = Unknown (e.g. not recovered).
life_status_lookup	numeric(9,0)	System generated unique key associated with the life_status.
links_part1	character(1)	Part 1 of code that records associations. The first part of the code records whether this piece of benthic material was living on (encrusting) anything. First part: 0 = Not encrusting anything. 1 = Encrusting non-living material. 2 = Encrusting living material.
links_part1_lookup	numeric(9,0)	System generated unique key associated with the links_part1.
links_part2	character(1)	Part 2 of code that records associations. The second part records whether something was living on this piece of benthic material. Second part: 0 = Not encrusted by anything. 1 = Encrusted by living material.
links_part2_lookup	numeric(9,0)	System generated unique key associated with the links_part2.
material_number	integer	Count of the colonies (corals, anemones bryozoans and sponges etc), individuals (annelids, molluscs, arthropods and echinoderms etc) or pieces (rocks, wood etc) of benthic material
material_quantity	character(1)	Code for approximately how many colonies, individuals or pieces of this type of benthic material are in this sample ID. U = Unknown/unable to be assessed. A = 1-5 B = 6-12 C = 13-25 D = 26-50 E = 51-100 F = 101-200 G = 201-500 H = 501-1000 I = >1000.
material_quantity_lookup	numeric(9,0)	System generated unique key associated with the material_quantity.
image	character(1)	Photograph(s) of sample taken, Y = Yes or N = No.

fnz_image_filename	character varying(256)		Image filename(s) of the sample - filename given by FNZ. (For trips in late 2023 onwards, comes from Benthic form. Prior to that, values were back-populated).
observer_comment	character varying(540)		Comments recorded by the observer.
phylum	character varying(30)		Phylum of the specimen.
species_label	character varying(16)		Label species code.
species_sort	character(3)		Sorted species code.
species_true	character(3)		The final (true) species identification code.
expert_name	character varying(64)		Scientific name of the specimen. (Full taxon).
sp_id_meth	character varying(30)		Source of the final (true) species identification: specimen = NIWA scientist used physical specimen. image = NIWA scientist used image/photo taken by observer. specimen and image = NIWA scientist(s) used both physical specimen and image.
niwa_catalogue_number	character varying(32)		Unique identifier of the physical specimen in NIWA Invertebrate Collection.
niwa_image_filename	character varying(512)		Image filename(s) of the sample - filename given by NIWA during processing and identification of images.
life_status_niwa	character varying(2)		Niwa code for specimen Alive or Dead.
niwa_comment	character varying		Comments by staff processing and identifying physical specimens. Includes project code.
niwa_comment_image	character varying		Comments by staff processing and identifying images of sample. Includes project code.
est_weight	numeric(11,3)		Estimated weight of the sample specimen. Weighted in gms, stored kgs to 3 places.
sum_est_weight	numeric(11,3)		Sum of the estimated weights for a sample.
weight_ratio	numeric(10,9)		Estimated weight / sum of weights for a sample, to adjust catch weight with.
species_number	smallint		The number of identified species in a sample.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
created_date	date	No	Date this row was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Error text for errors for the row.

Indexes:
"pk_y_benthic" PRIMARY KEY, btree (fishing_event_catch_key)
"indx_y_benthic_trip" btree (trip_number)

Table y_benthic_samples

Comment: Benthic sample details stage table.

Column	Type	Null?	Description
sample_benthic_key	integer	No	System generated unique key for the sample record.
trip_number	integer	No	Trip number for an observed trip.
station_number	integer	No	Station number is a sequential identifier of each tow or set of a trip.
sample_no	character varying(12)		The sample number of the sample, should equate to an Observer sample ID.
sample_type	character varying(32)		Sample type during the sorting of samples (by niwa staff).
phylum	character varying(32)		Phylum of the specimen.
label_id	character varying(20)		Species code recorded on the sample label by the observer.
sort_id	character varying(5)		Species code assigned during the sorting of samples (by niwa staff).
expert_sci	character varying(30)		Taxonomists ID or expert ID (sci name).
final_id	character(3)		Species code assigned from identification in expert_sci.
ident_method	character varying(16)		Identification method used, e.g. sight or photo.
determination_date	date		Date of Taxonomists identification.
est_weight	numeric(9,3)		Estimated weight of the sample specimen. Weighted in gms.
no_of_specimens	integer		The number of specimens in the sample.
life_status	character varying(5)		Code for specimen was Dead or Alive
comments	character varying(600)		Comments by staff processing samples.
last_edited_by	character varying(32)		Name of the person to last edit the record.
last_edited_date	date		Date of the last edit on the record.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
project_code	character varying(16)		The applicable project code for the sample.
created_date	date	No	Date this row was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Error text for errors for the row.

Indexes:

"pk_y_benthic_samples" PRIMARY KEY, btree (sample_benthic_key)

"ndx_station_number" btree (station_number)
"ndx_trip_number" btree (trip_number)

Table y_bird_baffler

Comment: Bird Baffler details.

Column	Type	Null?	Description
baffler_key	bigint	No	System generated key to identify the bird baffler.
trip_number	integer	No	Trip number allocated by the observer programme.
obs1	character(5)		First initial followed by the first three letters of observers surname involved in the measurement of the bird baffler.
obs2	character(5)		As for obs 1
equipment_code	character varying(3)		Equipment code consisting of the letter B plus a number. Each device measured during the trip is numbered from 1 onwards.
measure_date	date		Date that the measurements were made.
measure_reason	character(1)		Code to explain why this measurement was taken: I = Initial measurement D = description of the device in a Damaged state R = measurement of the device after it has been Repaired O = some Other reason for this measurement.
measure_type	character(1)		Full (F) to indicate that this is a full record of measurements or Partial (P) for the device that has had a full measurement and has then been altered.
based_on	character varying(3)		Where a Partial measurement the Equipment Code (eg B1) of the bird baffler that has been altered.
method_attach_location	character(1)		Code to indicate how precise the attachment location measurements are: A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates.
method_angle	character(1)		A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates.
method_inner_dropper	character(1)		A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates.
method_outer_dropper	character(1)		A = Accurately measured.

			C = Measurements are Compared with a known length. E = measurements are Estimates
method_spacing	character(1)		A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates
method_line_length	character(1)		A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates
method_object_length	character(1)		A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates
method_surface	character(1)		A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates
comments	character varying(900)		Bird baffler comments
measure_type_lookup_key	numeric(9,0)		Look up key for type of measurement record
reason_lookup_key	numeric(9,0)		System generated lookup key associated with the measure reason.
method_attach_lookup_key	numeric(9,0)		Lookup key for attachment location method of measurement
angle_lookup_key	numeric(9,0)		Angle from dead astern method of measurement look up key.
method_inner_lookup_key	numeric(9,0)		Distance to innermost dropper method of measurement look up key
method_outer_lookup_key	numeric(9,0)		Distance to outer most dropper method of measurement look up key
method_spacing_lookup_key	numeric(9,0)		Maximum dropper spacing method of measurement look up key
method_line_lookup_key	numeric(9,0)		Dropper line length method of measurement look up key
method_object_lookup_key	numeric(9,0)		Dropper object length method of measurement look up key
surface_gap_lookup_key	numeric(9,0)		Space between sea and dropper bottom method of measurement look up key
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date this record was created.

Indexes:
  "pk_y_bird_baffler" PRIMARY KEY, btree (baffler_key)
  "ndx_y_bird_baffler_trip" btree (trip_number)

Foreign-key constraints:
"fk_y_bird_baffler_ref" FOREIGN KEY (trip_key) REFERENCES y_observer_trip_master(trip_key)
ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "y_bird_baffler_boom" CONSTRAINT "fk_y_bird_b_reference_y_bird_b" FOREIGN KEY (baffler_key)
REFERENCES y_bird_baffler(baffler_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_bird_baffler_boom

Comment: Bird baffler boom details, up to 4 positions from stern quarter of a vessel.

Column	Type	Null?	Description
baffler_boom_key	bigint	No	System generated key to identify the bird baffler boom.
baffler_key	bigint	No	System generated key to identify the bird baffler.
trip_number	integer	No	Trip number allocated by the observer programme.
equipment_code	character(3)		Letter B plus a number, each baffler measure during this trip numbered from 1 upwards.
boom_position	smallint	No	Boom position as: 1 = Port side, 2 = Port aft, 3 = Starboard side, 4 = Starboard aft.
boom_present	character(1)		Present or Absent. Boom details only completed if indicated that this boom was present.
boom_location	numeric(4,2)		Distance to the appropriate reference point. (Stern corner of vessel) recorded in metres, rounded to the nearest 0.1m
boom_angle	smallint		Estimate of the angle of the boom from dead astern
inner_dropper	numeric(3,2)		Distance from the edge of the vessel to the innermost dropper.
outer_dropper	numeric(4,2)		Total distance from the edge of the vessel to the outermost dropper.
droppers_number	smallint		Number of droppers attached to the boom.
webbing_type	character(1)		Webbing Type connecting the droppers R = Rigid (for example lengths of pipe) F = Flexible (for example, rope) N = None (absent).
max_spacing	numeric(3,2)		Maximum dropper spacing (m).
line_length	numeric(4,2)		Average dropper line length in metres rounded to the nearest 0.1m.
object_length	numeric(3,2)		Average dropper object length (m)
surface_gap	numeric(4,2)		Estimate of the average gap between the bottom of a dropper object and the sea surface.

material_types	character varying(10)		Dropper Material code or codes of all materials used to form the dropper lines and dropper object. B = buoy, F = inverted funnel or plastic cone, H = plastic hosing, S = plastic strapping, L = length of line, R = plastic rod, M = length of metal, T = plastic tubing, W = weight, Z = No separate object, P = poly- pipe, O = other (describe in Additional Comments).
material_colours	character varying(10)		Colours on dropper, (except the main line). B = blue P = pink R = red C = carrot (orange) Y = yellow G = green F = faded colour (any) W = brown O = other (describe in Additional Comments).
boom_lookup_key	numeric(9,0)	No	Bird baffler boom position look up key.
material_lookup_key	numeric(9,0)		Dropper material look up key.
colours_lookup_key	numeric(9,0)		Dropper material colour look up key.
webbing_lookup_key	numeric(9,0)		Dropper webbing type look up key.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date this record was created.

Indexes:
"pk_y_bird_baffler_boom" PRIMARY KEY, btree (baffler_boom_key)
"indx_baffler_boom_key" btree (baffler_key)
"indx_baffler_boom_trip" btree (trip_number)
Foreign-key constraints:
"fk_y_bird_b_reference_y_bird_b" FOREIGN KEY (baffler_key)
REFERENCES y_bird_baffler(baffler_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_bll_gear

Comment: Bottom long line gear form, version 1, June 2019.

Column	Type	Null?	Description
bll_gear_key	numeric(9,0)	No	System generated unique key for BLL gear. Generated from trip_key and gear_code numeric identifier.
trip_number	integer	No	Trip number allocated by the observer programme.
observer_code	character(4)		Observer code, typically first name initial followed by the first three letters of observers surname.
gear_code	character(3)	No	Code used as unique identifier for a single longline configuration: BL = Bottom longline DL = Drop or Dahn line HL = Handline TL = Trot line
mainline_material	character(1)		Material used in mainline construction: M = Monofilament I = Integrated weight line (IWL) R = Rope O = Other. Refer to lookup key.
mainline_material_lookup_key	numeric(9,0)		Refer to x_lookup_code (lookup_code_type_key=174).
mainline_diameter	numeric(3,1)		Diameter of the mainline/backbone (mm).
integrated_weight_line	integer		Weight per metre of integrated weight line (g/m).
mainline_weight	integer		Average weight of the weights attached to the mainline/backbone (kg).
max_float_diameter	integer		Diameter of the largest float attached to the main line (cm).
drop_line_length	integer		Length of the line between the surface float and the anchor (m).
hooks_number_ssf	integer		Total number of hooks between surface float and anchor.
distance_ss_floats	integer		Average distance between subsurface floats (m).
weight_under_ssf	integer		Average weight of the weights attached to any subsurface floats (kg).
weight_material_ssf	character(1)		Material for weights attached to subsurface floats: M = Metal N = Non-metal

			Refer to lookup key.
weight_material_ssf_lookup_key	numeric(9,0)		Refer to x_lookup_code (lookup_code_type_key=175).
avg_distance_weights	integer		Average distance between weights along the mainline (m).
weight_material	character(1)		Material for mainline weights: M = Metal N = Non-metal
			Refer to lookup key.
weight_material_lookup_key	numeric(9,0)		Refer to x_lookup_code (lookup_code_type_key=176).
hooks_between_weights	integer		Average number of hooks between weights.
dropper_length	integer		Average length of the dropper line attaching weights to the backbone (m).
branchline_material	character(1)		Material used for branchlines/snoods: M = Monofilament R = Rope O = Other
			Refer to lookup key.
branchline_material_lookup_key	numeric(9,0)		Refer to x_lookup_code (lookup_code_type_key=177).
branchline_snood_length	integer		Average length of the branchlines/snoods (cm).
branchline_snood_spacing	integer		Average spacing between snoods (m).
hook_type	character(1)		Hook type used by the vessel: C = Circle J = J hook O Other
			Refer to lookup key.
hook_type_lookup_key	numeric(9,0)		Refer to x_lookup_code (lookup_code_type_key=178).
hook_size	character varying(4)		Hook size written on the packaging.
bait_method	character(1)		Method of baiting: M = Manual A = Automatic
			Refer to lookup key.
bait_method_lookup_key	numeric(9,0)		Refer to x_lookup_code (lookup_code_type_key=179).
comments	character varying		Observer comment on longline gear configuration.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this row was created.

error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Colon separated short error texts for errors in this row.

Indexes:
  "pk_y_bll_gear" PRIMARY KEY, btree (bll_gear_key)
  "ui_y_bll_gear" UNIQUE CONSTRAINT, btree (trip_number, gear_code)
Referenced by:
  TABLE "y_bll_line" CONSTRAINT "fk_y_bll_line_gear" FOREIGN KEY (bll_gear_key)
   REFERENCES y_bll_gear(bll_gear_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_bll_line

Comment: Details from a longline set and the corresponding haul of the set.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	Sequential identifier for each station (set).
start_setting_rec_by_obs	character(1)		Whether setting start details were recorded by: Y = observer N = vessel
end_setting_rec_by_obs	character(1)		Whether setting end details were recorded by: Y = observer N = vessel
entire_setting_observed_yn	character(1)		Entire set observed during setting (Y/N).
gear_code	character(3)		Gear code for the line set. Refers to code on BLL Gear form.
bll_gear_key	integer		System generated unique key for BLL gear. Refer to table y_bll_gear.
hooks_number	integer		The number of hooks set.
setting_period_1_start_time	time without time zone		Start time of observation period 1 (NZST 24hr).
setting_period_1_end_time	time without time zone		End time of observation period 1 (NZST 24hr).
setting_period_1_hooks_observed		integer	Total number of hooks observed during period 1.
setting_period_1_hooks_baited_perc		integer	Percentage of hooks baited from a sample of 100 hooks observed during period 1.
setting_period_2_start_time	time without time zone		Start time of observation period 2 (NZST 24hr).
setting_period_2_end_time	time without time zone		End time of observation period 2 (NZST 24hr).
setting_period_2_hooks_observed		integer	Total number of hooks observed during period 2.
setting_period_2_hooks_baited_perc		integer	Percentage of hooks baited from a sample of 100 hooks observed during period 2.
setting_period_3_start_time	time without time zone		Start time of observation period 3 (NZST 24hr).
setting_period_3_end_time	time without time zone		End time of observation period 3 (NZST 24hr).
setting_period_3_hooks_observed		integer	Total number of hooks observed during period 3.
setting_period_3_hooks_baited_perc		integer	Percentage of hooks baited from a sample of 100 hooks observed during period 3.
strategy	character(2)		Two-part code for fishing strategy during setting.

strategy_part1	character(1)	Fishing strategy employed during setting (Part 1 - personnel).
strategy_part1_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=184)
strategy_part2	character(1)	Fishing strategy employed during setting (Part 2 - attribute).
strategy_part2_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=185)
gear_discard_yn	character(1)	Gear was discarded during setting (Y/N).
line_setting_height	numeric(3,1)	Line setting height (m).
line_length	integer	Length of line (m) while setting.
setting_path	character(2)	Two-part code for path of vessel while setting. Code detail on back of setting form.
setting_path_part1	character(1)	Shape of the path followed by the vessel during setting.
setting_path_part1_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=186).
setting_path_part2	integer	The number of turns made by the vessel along the setting path.
min_hook_depth	integer	Minimum hook distance from seabed (m) during setting.
max_hook_depth	integer	Maximum hook distance from seabed (m) during setting.
dist_stern_to_bait_min	integer	Minimum distance from stern to bait entry point (m) during setting.
dist_stern_to_bait_max	integer	Maximum distance from stern to bait entry point (m) during setting.
dist_bait_to_tori	integer	Lateral distance from bait entry point to tori line (m) during setting.
bait1_species	character(3)	Species code for the principle bait species used.
bait1_composition	integer	Percentage of total baited hooks having bait 1 species during setting.
bait1_state	character(1)	State of bait 1 species during setting: F = Frozen T = Thawed S = Semi-thawed Refer to lookup_key
bait1_state_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=187).
bait2_species	character(3)	Species code for the 2nd most relevant bait species used.
bait2_composition	integer	Percentage of total baited hooks having bait 2 species during setting.
bait2_state	character(1)	State of bait 2 species during setting: F = Frozen T = Thawed S = Semi-thawed Refer to lookup_key.
bait2_state_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=187).

bait3_species	character(3)	3-char species code for bait 3 species during setting.
bait3_composition	integer	Percentage of total baited hooks having bait 3 species during setting.
bait3_state	character(1)	State of bait 3 species during setting: F = Frozen T = Thawed S = Semi-thawed Refer to lookup_key.
bait3_state_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=187).
bait_prop_wash	character(1)	Whether bait lands inside vessel prop wash during setting (Y/N/U).
setting_acoustic_bird_deterrent	character(1)	Whether acoustic bird deterrents were used at any time during the set (Y/N/U).
setting_laser_deterrent	character(1)	Whether a Laser deterrent was used at any time during the set (Y/N/U).
setting_deck_light	character(1)	Whether there was unnecessary deck lighting while setting (Y/N/U).
setting_other_mitigation_yn	character(1)	Whether there were any other mitigation devices or strategies used during setting (Y/N).
discards_during_setting	character(1)	Any offal bait or whole fish discarded during setting. Refer to lookup_key.
discards_during_setting_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=188)
tori_used	character(1)	Whether a tori line was deployed during setting (Y/N/U).
port_tori_gear_code	character(2)	Gear code of tori line attached on port side of vessel during setting.
port_tori_problem_code	character varying(3)	Problem code for port side tori line. Refer to lookup_key.
port_tori_problem_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=189)
centre_tori_gear_code	character(2)	Gear code of tori line attached on centre of vessel during setting.
centre_tori_problem_code	character varying(3)	Problem code for centre tori line. Refer to lookup_key.
centre_tori_problem_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=189)
stbd_tori_gear_code	character(2)	Gear code of tori line attached on starboard side of vessel during setting.
stbd_tori_problem_code	character varying(3)	Problem code for starboard side tori line. Refer to lookup_key.
stbd_tori_problem_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=189)
end_hauled_first	integer	Which end of line hauled first: 0 = Unknown 1 = End set first 2 = End set last
start_haul_rec_by_obs	character(1)	Whether hauling start details were recorded by: Y = observer N = vessel.

end_haul_rec_by_obs	character(1)		Whether hauling end details were recorded by: Y = observer N = vessel.
entire_haul_observed_yn	character(1)		Whether the entire haul was observed (Y/N).
haul_period_1_start_time	time without time zone		Start time of observation period 1 (NZST 24hr).
haul_period_1_end_time	time without time zone		End time of observation period 1 (NZST 24hr).
haul_period_1_hooks_observed		integer	Number of hooks observed hauled in period 1.
haul_period_2_start_time	time without time zone		Start time of observation period 2 (NZST 24hr).
haul_period_2_end_time	time without time zone		End time of observation period 2 (NZST 24hr).
haul_period_2_hooks_observed		integer	Number of hooks observed hauled in period 2.
haul_period_3_start_time	time without time zone		Start time of observation period 3 (NZST 24hr).
haul_period_3_end_time	time without time zone		End time of observation period 3 (NZST 24hr).
haul_period_3_hooks_observed		integer	Number of hooks observed hauled in period 3.
haul_period_4_start_time	time without time zone		Start time of observation period 4 (NZST 24hr).
haul_period_4_end_time	time without time zone		End time of observation period 4 (NZST 24hr).
haul_period_4_hooks_observed		integer	Number of hooks observed hauled in period 4.
haul_period_5_start_time	time without time zone		Start time of observation period 5 (NZST 24hr).
haul_period_5_end_time	time without time zone		End time of observation period 5 (NZST 24hr).
haul_period_5_hooks_observed		integer	Number of hooks observed hauled in period 5.
haul_period_6_start_time	time without time zone		Start time of observation period 6 (NZST 24hr).
haul_period_6_end_time	time without time zone		End time of observation period 6 (NZST 24hr).
haul_period_6_hooks_observed		integer	Number of hooks observed hauled in period 6.
hooks_lost_number	integer		The number of hooks lost.
fishing_gear_discard_yn	character(1)		Whether fishing gear was discarded during haul (Y/N).
haul_location	character(1)		Location on vessel where hauling took place: P = Port S = Starboard S = Stern
port_offal_discard	character(1)		Code for offal bait and whole fish discarding on port/starboard/stern during hauling. Refer to lookup_key.
port_offal_discard_lookup_key		integer	Refer to x_lookup_code (lookup_code_type_key=190)
port_bait_discard	character(1)		Code for bait discarding on port side during hauling. Refer to lookup_key
port_bait_discard_lookup_key		integer	Refer to x_lookup_code (lookup_code_type_key=190)

port_whole_fish_discard	character(1)		Code for whole fish discarding on port side during hauling.Refer to lookup_key
port_whole_fish_discard_lookup_key	integer		Refer to x_lookup_code (lookup_code_type_key=190)
stbd_offal_discard	character(1)		Code for offal discarding on starboard side during hauling.Refer to lookup_key
stbd_offal_discard_lookup_key	integer		Refer to x_lookup_code (lookup_code_type_key=190)
stbd_bait_discard	character(1)		Code for bait discarding on starboard side during hauling.Refer to lookup_key
stbd_bait_discard_lookup_key	integer		Refer to x_lookup_code (lookup_code_type_key=190)
stbd_whole_fish_discard	character(1)		Code for whole fish discarding on starboard side during hauling.Refer to lookup_key
stbd_whole_fish_discard_lookup_key	integer		Refer to x_lookup_code (lookup_code_type_key=190)
stern_offal_discard	character(1)		Code for offal discarding aft over stern during hauling.Refer to lookup_key
stern_offal_discard_lookup_key	integer		Refer to x_lookup_code (lookup_code_type_key=190)
stern_bait_discard	character(1)		Code for bait discarding aft over stern during hauling.Refer to lookup_key
stern_bait_discard_lookup_key	integer		Refer to x_lookup_code (lookup_code_type_key=190)
stern_whole_fish_discard	character(1)		Code for whole fish discarding aft over stern during hauling.Refer to lookup_key
stern_whole_fish_discard_lookup_key	integer		Refer to x_lookup_code (lookup_code_type_key=190)
water_deterrent_used_yn	character(1)		Whether water deterrents were used as a mitigation strategy for protected species captures during hauling(Y/N).
haul_acoustic_deterrent_used_yn	character(1)		Whether acoustic bird deterrents were used during hauling as a mitigation strategy for protected species captures (Y/N).
bird_exclusion_used_yn	character(1)		Whether bird exclusion devices were used as a mitigation strategy for protected species captures during hauling (Y/N).
haul_other_mitigation_used_yn	character(1)		Whether any other mitigation devices were used during hauling (Y/N).
predation_evidence_yn	character(1)		Whether any evidence of marine mammal predation was observed during hauling (Y/N).
number_of_fish_predated	integer		Number of fish predated by marine mammals as observer during hauling.
catch_assessment_code	character(4)		Code to identify the catch assessment for the degree of observation by the observer.
catch_assess_code_lookup_key	numeric(9,0)	No	System generated Lookup key associated with the catch assessment code.

topography_code	integer		Numeric code to describe the bottom contour.
topography_code_lookup_key		numeric(9,0)	System generated lookup key associated with the topography_code.
hooks_baited_percentage	numeric(7,3)		The percentage of hooks that were baited.
length_frequency_taken_yn	character(1)		Whether Length Frequency was done on fish from this set? Y = Yes, N = No.
observer_code_setting	character(4)		Observer code as recorded for the setting event.
observer_code_hauling	character(4)		Observer code as recorded for the hauling event
setting_comments	character varying(512)		Observer comments on line setting event.
haul_comments	character varying(512)		Observer comments on line hauling event.
catch_comments	character varying(512)		Observer comments during the catch event.
line_comments	character varying(800)		Comments about the longline set.
bottom_lining_comment_key		numeric(9,0)	System generated key to identify the bottom lining comment in the other comments when the line comments is present.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	System generated key to identify the associated fishing event for the bottom lining (based on trip number and station number).
fishing_event_type_key	numeric(9,0)	No	The system generated key associated with the type of fishing event (e.g. Trawl Effort, Surface Lining Effort) based on Method
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_bll_line" PRIMARY KEY, btree (trip_number, station_number)
"ui_y_bll_line" UNIQUE CONSTRAINT, btree (fishing_event_key)
Foreign-key constraints:
"fk_y_bll_line_gear" FOREIGN KEY (bll_gear_key) REFERENCES y_bll_gear(bll_gear_key)
ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_bll_line_ref" FOREIGN KEY (trip_number, station_number)
REFERENCES y_lfs_station(trip_number, station_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_cnv_conv_factor_comm

Comment: Scientific Observer Programme conversion factor form comments.

Column	Type	Null?	Description
conversion_factor_comment_key	numeric(9,0)	No	System generated key associated with the conversion factor comment.
trip_number	integer	No	Trip number allocated by the observer programme.
processed_state_code	character(4)	No	Code to identify the state to which the fish has been processed to.
fma_code	character(7)	No	Code identifying the Fisheries Management Area where the sample was taken.
species	character(3)	No	Species code for the species tested.
comments	character varying(2048)	No	Comment about the conversion factor record.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
  "pk_y_cnv_conv_factor_comm" PRIMARY KEY, btree (conversion_factor_comment_key)
  "ndx_new_conv_factors_comm__trip" btree (trip_number)

Table y_cnv_conversion_factor

Comment: Details of conversion factor data collected by the SOP.

Column	Type	Null?	Description
conversion_factor_key	integer	No	System generated key to identify the conversion factor.
trip_number	integer	No	Trip number allocated by the observer programme.
tow_number	integer	No	Sequential identifier for each tow.
number_of_tows	integer		The number of tows included in the CF test (Surimi).
tow_number_to	integer	No	The tow number up to, that is included when the data is for a group of tows (Surimi).
species	character(3)	No	Species code for the species tested.
processed_state_code	character varying(3)		Code to identify the state to which the fish has been processed to.
processed_state_code_lookup	integer		System generated Lookup key associated with processed state code.
proc_state_original_code	character varying(3)		Original processed state as stored in the conversion_factor table.
fma_code	character varying(4)		Code identifying the Fisheries Management Area where the sample was taken.
min_length	numeric(5,1)		Minimum length of fish in sample in centimetres.
max_length	numeric(5,1)		Maximum length of fish in sample in centimetres.
min_tail_cut	numeric(4,1)		Minimum tail cut of fish in the sample (cm).
mean_tail_cut	numeric(4,1)		Median tail cut from what appears to be the average 2 or 3 tail cuts of fish in the sample (mm).
max_tail_cut	numeric(4,1)		Maximum tail cut of fish in the sample (cm).
number_of_fish	integer		Number of fish in this test.
greenweight	numeric(11,3)		Greenweight of the fish used to calculate the conversion factor in kilograms.
stomach_gonad_weight	numeric(11,3)		The weight of stomach and gonads if significant (kg).
processed_units_number	integer		Number of processed units in the sample.
non_compliant_cuts_total	integer		Total number of fish with non-compliant cuts.
non_compliant_undercuts	integer		Number of fish with non-compliant undercuts.
non_compliant_overcuts	integer		Number of fish with non-compliant overcuts.
non_compliant_head_cuts	integer		Number of fish with non-compliant head cuts.
non_compliant_tail_cuts	integer		Number of fish with non-compliant tail cuts.
non_compliant_head_tail_cuts	integer		Number of fish with non-compliant head and tail cuts.
post_machine_weight	numeric(11,3)		Weight post machine - Baader/ Trio machine in kilograms.

processed_weight	numeric(11,3)		Weight (kg) of the fish after processing.
trimming_weight	numeric(11,3)		Trimming weight in kilograms.
processing_equipment_code	integer		Code to identify the processing equipment used: 1 hand (cut with knife), 2 machine (see machine_type).
process_equipment_lookup_key	numeric(9,0)	No	System generated lookup key associated with the processing equipment code.
machine_type_name	character varying(50)		Brand name of heading & gutting or filleting machine used.
conversion_factor	numeric(7,4)		Calculated conversion factor as a result of calculation greenweight/ processed weight.
scales_used_gw_code	character varying(4)		Code to identify the type of scales used for green weight. Values: 1 = electronic, 2 = flatbed, 3 = hanging, 4 = other.
scales_used_gw_lookup_key	numeric(9,0)	No	System generated lookup key associated with the greenweight scales used code.
scales_used_pw_code	character varying(4)		Code to identify the type of scales used for processed weight. Values: 1 = electronic, 2 = flatbed, 3 = hanging, 4 = other.
scales_used_pw_lookup_key	numeric(9,0)	No	System generated lookup key associated with the processed weight scales used code.
valid_test_yn	character(1)		Whether the test is considered valid (Yes or No).
test_type	character varying(2)		Type of test - R Random or NR Non Random.
test_type_lookup_key	numeric(5,0)		System generated lookup key associated with the test type.
sex_sampled	integer		Sex where single fish sampled e.g. tuna, 1 male, 2 female, 3 unsexed.
sex_sampled_lookup_key	numeric(5,0)		System generated lookup key associated with the sex type.
comments	character varying(3000)		Comments about the conversion factor sample.
comments_key	numeric(9,0)	No	System generated key associated with the conversion factor comment.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(10,0)		System generated key of the fishing event.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:

"pk_y_cnv_conversion_factor" PRIMARY KEY, btree (conversion_factor_key)

"ndx_y_cnv_new_conversion_factor_species" btree (species)

"ndx_y_cnv_new_conversion_factor_tow" btree (tow_number)

"ndx_y_cnv_new_conversion_factor_trip" btree (trip_number)

Table y_ctn_catch

Comment: Catch data for Inshore interaction trips, initially only from Benthic Materials Form. Table added 15Dec2011.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	Sequential identifier for each station (tow or set).
species	character(3)	No	Code to identify the species caught on the set.
discard_status	character(4)		Code to identify the discard status.
discard_status_lookup	numeric(9,0)		System generated Lookup key associated with the catch weight method code.
number_of_fish	integer		Number of fish of this species in the catch.
catch_weight	numeric(11,3)		The weight for the species caught in kilograms.
weight_method_part1	character(1)		Part 1 of the weight method, weight devive for BLL.
weight_method_part1_lookup	numeric(9,0)		System generated Lookup key associated with the catch weight method code part 1.
weight_method_part2	character varying(3)		Part 2 of the weight method, ie analysis method.
weight_method_part2_lookup	numeric(9,0)		System generated Lookup key associated with the catch weight method code part 2.
fishing_event_catch_key	numeric(10,0)	No	System generated unique key to identify the fishing_event_catch.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this row was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_y_ctn_catch" PRIMARY KEY, btree (fishing_event_catch_key)
Foreign-key constraints:
  "fk_y_ctn_catch_ref" FOREIGN KEY (trip_number, station_number)
   REFERENCES y_ctn_fishing(trip_number, station_number)

Table y_ctn_fishing

Comment: Fishing event data from Inshore interactions (formerly cetacean) trips.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
vessel_key	numeric(9,0)		The Ministry of Fisheries allocated key for the vessel.
start_voyage_number	integer		Starting voyage number associated with the fishing event.
end_voyage_number	integer		Ending voyage number associated with the fishing event.
event_key	numeric(9,0)	No	System generated event key to identify the fishing event.
station_number	integer		Sequential number for each station (tow or set).
target_species	character(3)		Species code for the species being targeted.
fishing_method	character varying(3)		Fishing method code.
form_number	character varying(20)		3 letter code depicting the type of return the fisher is using, options are CEL, LTC, TCE or NCE followed by the form number.
effort	integer		An effort measure that varies according to fishing method: Wingspread for trawl, hook numbers for longline or troll, total net length for set net, or number of pots the vessels expecting to check that day for potting.
mitigation	character varying(20)		A distinct list of mitigation techniques: Baffler, Tori, Cannon, Pingers, Warp scarer, Offal management, Dyed baits, Sticker removal, Other or None.
observed_yn	character(1)		Did the observer view this event or not, derived from z_ctn_fishing.missed_event_flag.
start_seabed_depth	integer		Depth to seabed at the start of fishing event in metres
end_seabed_depth	integer		Depth to seabed at the end of fishing event in metres.
topography_code	integer		Numeric code to describe the bottom contour.
topography_code_lookup_key	numeric(9,0)		System generated lookup key associated with the topography_code.
bait1_species	character(3)		Species code for the principal bait species used.
bait2_species	character(3)		Species code for the 2nd most relevant bait species used.
hooks_observed	integer		The number of hooks observed.
hooks_baited_percentage	integer		The percentage of hooks that were baited.
hooks_lost_number	integer		The number of hooks lost.
length_frequency_taken_yn	character(1)		Whether Length Frequency was done on fish from this set? Y = Yes, N = No.

event_start_date	date	The date at the start of the event, when the vessel first begins to put pieces of fishing equipment in the water.
event_start_time	time without time zone	The time at the start of the event, when the vessel first begins to put pieces of fishing equipment in the water.
event_start_lat	numeric(8,4)	The starting position latitude of the fishing events deployment of fishing gear into the water.
event_start_nth_sth	character(1)	The fishing events starting position latitude hemisphere (N or S).
event_start_long	numeric(9,4)	The starting position longitude of the fishing events deployment of fishing gear into the water.
event_start_est_wst	character(1)	The fishing events starting position longitude hemisphere (E or W).
event_start_latitude	numeric(8,6)	Latitude of the position at the start of the fishing event in decimal degrees
event_start_longitude	numeric(9,6)	Longitude of the position at the start of the fishing event in decimal degrees
display_event_start_latitude	character(12)	Latitude of the position at the start of the fishing event, in degrees and minutes formatted for display purposes.
display_event_start_longitude	character(13)	Longitude of the position at the start of the fishing event, in degrees and minutes formatted for display purposes.
event_start_pdop	numeric(2,1)	The fishing events starting measurement of accuracy of the GPS position based on the number of satellites and the geometry of satellite position.
fish_start_date	date	The starting date of fishing i.e. at end of deployment of fishing gear, for trawling occurs after target depth is reached.
fish_start_time	time without time zone	The starting time of fishing i.e. at end of deployment of fishing gear, for trawling occurs after target depth is reached.
fish_start_lat	numeric(8,4)	The starting latitude at end of deployment of fishing gear or after target depth is reached - for trawling.
fish_start_nth_sth	character(1)	The starting latitude hemisphere at end of deployment (N or S) or after target depth is reached - for trawling.
fish_start_long	numeric(9,4)	The starting longitude at end of deployment of fishing gear or after target depth is reached - for trawling.
fish_start_est_wst	character(1)	The starting longitude hemisphere at end of deployment of fishing gear (E or W) or after target depth is reached - for trawling.
fish_start_latitude	numeric(8,6)	Latitude of the position in decimal degrees at end of deployment of fishing gear or after target depth is reached - for trawling

fish_start_longitude	numeric(9,6)	Longitude of the position in decimal degrees at end of deployment of fishing gear or after target depth is reached - for trawling
display_fish_start_latitude	character(12)	Latitude of the position at end of deployment of fishing gear or after target depth is reached - for trawling, in degrees and minutes formatted for display purposes.
display_fish_start_longitude	character(13)	Longitude of the position at end of deployment of fishing gear or after target depth is reached - for trawling, in degrees and minutes formatted for display purposes.
fish_start_pdop	numeric(2,1)	The fishing events starting measurement of accuracy of the GPS position based on the number of satellites and the geometry of satellite position.
fish_end_date	date	The ending date of fishing, when target depth is left for trawling, when troll lines pulled, when first longline hook hauled or first piece of net is hauled.
fish_end_time	time without time zone	The ending time of fishing, when target depth is left for trawling, when troll lines pulled, when first longline hook hauled or first piece of net is hauled.
fish_end_lat	numeric(8,4)	The latitude of the fishing event at the start of hauling fishing gear
fish_end_nth_sth	character(1)	The latitude hemisphere at the start of hauling fishing gear (S or N).
fish_end_long	numeric(9,4)	The longitude of the fishing event at the start of hauling fishing gear
fish_end_est_wst	character(1)	The longitude hemisphere of the fishing event at the start of hauling fishing gear (E or W).
fish_end_latitude	numeric(8,6)	The latitude of the fishing event in decimal degrees at the start of hauling of fishing gear
fish_end_longitude	numeric(9,6)	The longitude of the fishing event in decimal degrees at the start of hauling of fishing gear
display_fish_end_latitude	character(12)	The latitude of the fishing event at the start of hauling of fishing gear, in degrees and minutes formatted for display purposes.
display_fish_end_longitude	character(13)	The longitude of the fishing event at the start of hauling of fishing gear, in degrees and minutes formatted for display purposes.
fish_end_pdop	numeric(2,1)	The fishing events ending measurement of accuracy of the GPS position based on the number of satellites and the geometry of satellite position.
event_end_date	date	The date at the end of the fishing event, when all the fishing gear ie nets or hooks are removed from the water.
event_end_time	time without time zone	The time at the end of the fishing event, when all the fishing gear ie nets or hooks are removed from the water.

event_end_lat	numeric(8,4)	The ending position latitude of the fishing event, ie withdrawl of fishing gear out of the water .
event_end_nth_sth	character(1)	The fishing events end position latitude hemisphere (N or S).
event_end_long	numeric(9,4)	The ending position longitude of the fishing event, ie withdrawl of fishing gear out of the water.
event_end_est_wst	character(1)	The fishing events ending position longitude hemisphere (E or W).
event_end_latitude	numeric(8,6)	Latitude of the position in decimal degrees at withdrawl of fishing gear out of the water.
event_end_longitude	numeric(9,6)	Longitude of the position in decimal degrees at withdrawl of fishing gear out of the water.
display_event_end_latitude	character(12)	Latitude of the position at withdrawl of fishing gear out of the water, in degrees and minutes formatted for display purposes.
display_event_end_longitude	character(13)	Longitude of the position at withdrawl of fishing gear out of the water, in degrees and minutes formatted for display purposes.
event_end_pdop	numeric(2,1)	The fishing events ending measurement of accuracy of the GPS position based on the number of satellites and the geometry of satellite position.
start_obs_fma	character varying(5)	The (derived) fma area code associated with the Start Latitude and Longitude.
end_obs_fma	character varying(5)	The (derived) fma area code associated with the End Latitude and Longitude.
start_stats_area	character varying(5)	The (derived) stats area code associated with the Start Latitude and Longitude.
end_stats_area	character varying(5)	The (derived) stats area code associated with the End Latitude and Longitude.
fishing_year	character(7)	Fishing year in YYYY/YY format.
error_highest_level	smallint	The highest error level associated with the error messages for the row.
error_count	integer	The number of error messages for the row.
error_text	character varying	Comma separated short texts for errors for the row.
created_date	date	Date this row was created.

Indexes:
  "pk_y_ctn_fishing" PRIMARY KEY, btree (event_key)
  "ui_y_ctn_fishing" UNIQUE, btree (trip_number, station_number)
Foreign-key constraints:
  "fk_y_ctn_fishing_voyage" FOREIGN KEY (trip_number, start_voyage_number)
   REFERENCES y_ctn_voyage(trip_number, voyage_number)
Referenced by:
  TABLE "y_ctn_catch" CONSTRAINT "fk_y_ctn_catch_ref" FOREIGN KEY (trip_number, station_number)

REFERENCES y_ctn_fishing(trip_number, station_number)

Table y_ctn_incident

Comment: Inshore interactions (formerly cetacean) incident data, eg non-fish by catch captures and other notable incidents.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
vessel_key	numeric(9,0)		
voyage_number	integer	No	Number assigned to voyage within a trip.
incident_type	character varying(40)		Description of the cetacean incident.
event_key	numeric(10,0)	No	System generated event key to identify the incident.
incident_date	date		Date of the incident sighting.
incident_time	time without time zone		Time of the incident sighting.
lat	numeric(8,4)		Vessel latitude (format DDMM.mmmm).
nth_sth	character(1)		Latitude hemisphere North or South (N or S).
long	numeric(9,4)		Vessel longitude (format DDDMM.mmmm).
est_wst	character(1)		Longitude meridian East or West (E or W).
latitude	numeric(8,6)		Latitude of position in decimal degrees (format DD.dddddd).
longitude	numeric(9,6)		Longitude of position in decimal degrees (format DDD.dddddd).
display_latitude	character(12)		Latitude position in degrees and minutes (Display format).
display_longitude	character(14)		Longitude position in degrees and minutes (Display format).
pdop	numeric(2,1)		The Position Dilution of Precision for the GPS position. A measure of the geometrical strength of the GPS satellite configuration. The smaller the number the better the accuracy.
photo	character(1)		Was a photo taken of the incident?
comments	character(1)		Is there a comment regarding the incident?
report	character(1)		Is there a report regarding the incident?
incident_number	integer	No	Number assigned to the incident.
obs_fma	character varying(5)		The (derived) fma area code associated with the Latitude and Longitude.
stats_area	character varying(5)		The (derived) stats area code associated with the Latitude and Longitude.
fishing_year	character(7)		Fishing year in YYYY/YY format.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.

error_text	character varying(512)		Comma separated short texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
  "pk_y_ctn_incident" PRIMARY KEY, btree (event_key)
  "ui_y_ctn_incident" UNIQUE, btree (trip_number, voyage_number, incident_number)
Foreign-key constraints:
  "fk_y_ctn_incident_voyage" FOREIGN KEY (trip_number, voyage_number)
   REFERENCES y_ctn_voyage(trip_number, voyage_number)

Table y_ctn_sighting

Comment: Sightings data from Inshore interactions (formerly Cetacean) trips.

Column	Type	Null?	Description
trip_number	integer	No	The Trip number allocated by the Observer Programme.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
vessel_key	numeric(9,0)		Fisheries New Zealand allocated key for the vessel.
event_key	numeric(10,0)	No	System generated event key to identify the sighting.
voyage_number	integer	No	Number assigned to voyage within a trip.
species	character(3)		3 character species code of animal sighted.
group_pod	smallint		An identifier for each distinct group of protected species sighted within a trip.
sequence_number	integer		Records information about each particular "group pod" through time.
parent_pod	smallint		Used when a particular group splits into 2 different groups exhibiting different behaviours.
adult_count	smallint		The number of adults in the sighting.
young_count	smallint		The number of young in the sighting.
activity	character varying(60)		A description of what the animal was doing (a specified list of values).
photo_date	date		The date that a photo was taken of the sighting.
photo_time	time without time zone		The time that a photo was taken of the sighting.
image_filename	character(256)		Filename(s) of photo(s) related to the sighting.
sighting_date	date		Date of the activity sighting.
sighting_time	time without time zone		Time of the activity sighting.
lat	numeric(8,4)		Latitude of the sighting (format DDMM.mmmm).
nth_sth	character(1)		Latitude hemisphere North or South (N or S).
long	numeric(9,4)		Longitude of the sighting (format DDDMM.mmmm).
est_wst	character(1)		Longitude meridian East or West (E or W).
latitude	numeric(8,6)		Latitude of the sighting in decimal degrees (format DD.dddddd).
longitude	numeric(9,6)		Longitude of the sighting in decimal degrees (format DDD.dddddd).
display_latitude	character(12)		Latitude of the sighting (Display format)
display_longitude	character(13)		Longitude of the sighting (Display format)

pdop	numeric(2,1)		Position Dilution of Precision for the GPS position. A measure of the geometrical strength of the GPS satellite configuration. The smaller the number the better the accuracy.
active_event_number	integer		Fishing event number (station number) of the active fishing event if applicable.
observer_status	character varying(20)		Either where physically the observer was on station or whether they were "off duty".
sighting_type	character(12)		Whether the sighting was random or non-random (i.e. as part of the sighting observation period).
commercial_vessels_visible	integer		A count of visible commercial fishing vessels.
other_vessels_visible	integer		A count of recreational and commercial non-fishing vessels.
visibility	integer		A measure of visibility: 1 - fog, 2 - poor, 3 - fair, 4 - good. Refer to x_lookup_codes (lookup_code_type_key = 194) for full description.
visibility_lookup_key	integer		Lookup_key for Visibility. Refer to x_lookup_codes (lookup_code_type_key = 194)
fishing_gear_interaction	character(10)		Proportion of animals interacting with fishing gear: None, Some or All.
fish_waste_discarded	character(1)		Whether fish waste was discarded during the observation period. (Y/N)
obs_fma	character varying(5)		The (derived) fma area code associated with the Latitude and Longitude.
stats_area	character varying(5)		The (derived) stats area code associated with the Latitude and Longitude.
fishing_year	character(7)		Fishing year in YYYY/YY format.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_ctn_sighting" PRIMARY KEY, btree (event_key)
Foreign-key constraints:
"fk_y_ctn_sighting_voyage" FOREIGN KEY (trip_number, voyage_number)
REFERENCES y_ctn_voyage(trip_number, voyage_number)

Table y_ctn_status

Comment: Inshore interactions (formerly cetacean) status data, including if observer was on shift and sea state.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
vessel_key	numeric(9,0)		The Ministry of Fisheries allocated key for the vessel.
event_key	numeric(10,0)	No	System generated event_key to identify the status event.
voyage_number	integer	No	Number assigned to voyage within a trip.
sighting_count	integer		A summary of how many group pods were visible.
fishing_event_count	integer		A summary of how many fishing events were active at that time.
observer_status	character varying(20)		Either where physically the observer was on station or whether they were "off shift".
sea_state_beaufort	smallint		Sea state coded on the Beaufort scale.
beaufort_lookup_key	numeric(9,0)		System generated lookup key associated with the beaufort scale.
comm_vessels_visible	integer		A count of visible commercial fishing vessels.
oth_vessels_visible	integer		A count of recreational and commercial non fishing vessels.
status_date	date		The date of the status record.
status_time	time without time zone		The time of the status record.
lat	numeric(8,4)		Vessel latitude (format DDMM.mmmm).
nth_sth	character(1)		Latitude hemisphere North or South (N or S).
long	numeric(9,4)		Vessel longitude (format DDDMM.mmmm).
est_wst	character(1)		Longitude meridian East or West (E or W).
latitude	numeric(8,6)		Latitude of position in decimal degrees (format DD.dddddd).
longitude	numeric(9,6)		Longitude of position in decimal degrees (format DDD.dddddd).
display_latitude	character(12)		Latitude position in degrees and minutes (Display format).
display_longitude	character(13)		Longitude position in degrees and minutes (Display format).
pdop	numeric(2,1)		The Position Dilution of Precision for the GPS position. A measure of the geometrical strength of the GPS satellite configuration. The smaller the number the better the accuracy.
obs_fma	character varying(5)		The (derived) fma area code associated with the Latitude and Longitude.
stats_area	character varying(5)		The (derived) stats area code associated with the Latitude and Longitude.

fishing_year	character(7)		Fishing year in YYYY/YY format.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
  "pk_y_ctn_status" PRIMARY KEY, btree (event_key)
Foreign-key constraints:
  "fk_y_ctn_status_voyage" FOREIGN KEY (trip_number, voyage_number)
   REFERENCES y_ctn_voyage(trip_number, voyage_number)

Table y_ctn_voyage

Comment: Voyage data from Inshore interactions (formerly cetacean) observations for a trip.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
vessel_key	numeric(9,0)		The Ministry of Fisheries allocated key for the vessel.
captain	character varying(40)		Name of Captain associated with the trip/voyage.
observer_code	character(4)		Unique observer code. The first initial followed by the first 3 letters of observers surname, unless this is not unique.
voyage_number	integer	No	Number assigned to voyage within a trip.
event_key	numeric(10,0)	No	System generated event key to identify the voyage.
start_date	date		Date at start of the voyage.
start_time	time without time zone		Time at start of the voyage.
start_lat	numeric(8,4)		Start position latitude (DDMM.mmmm format).
start_nth_sth	character(1)		Start position latitude north or south of the equator (N or S).
start_long	numeric(9,4)		Start position longitude (DDDMM.mmmm format).
start_est_wst	character(1)		Start position meridian, E or W.
start_latitude	numeric(8,6)		Start position latitude in decimal degrees (format DD.dddddd).
start_longitude	numeric(9,6)		Start position longitude in decimal degrees east of Greenwich (format DDD.dddddd).
display_start_latitude	character(12)		Start position latitude in degrees and minutes (Display format)
display_start_longitude	character(13)		Start position longitude in degrees and minutes (Display format).
start_pdop	numeric(2,1)		Position Dilution of Precision for the GPS start position. PDOP gives a measure of the geometrical strength of the GPS satellite configuration. The smaller the number the better the accuracy.
end_date	date		Date at the end of the voyage.
end_time	time without time zone		Time at the end of the voyage.
end_lat	numeric(8,4)		End position latitude (DDMM.mmmm format).
end_nth_sth	character(1)		End position latitude north or south of the equator (N or S).
end_long	numeric(9,4)		End position longitude (DDDMM.mmmm format).
end_est_wst	character(1)		End position meridian, E or W.

end_latitude	numeric(8,6)		End position latitude in decimal degrees (format DD.dddddd).
end_longitude	numeric(9,6)		End position longitude in decimal degrees east of Greenwich (format DDD.dddddd).
display_end_latitude	character(12)		End position latitude in degrees and minutes (Display format).
display_end_longitude	character(13)		End position longitude in degrees and minutes (Display format).
end_pdop	numeric(2,1)		Position Dilution of Position for the GPS end position. PDOP gives a measure of the geometrical strength of the GPS satellite configuration. The smaller the number the better the accuracy.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
  "pk_y_ctn_voyage" PRIMARY KEY, btree (trip_number, voyage_number)
  "ui_y_ctn_voyage" UNIQUE, btree (event_key)
Foreign-key constraints:
  "fk_y_ctn_voyage_trip_number" FOREIGN KEY (trip_number)
   REFERENCES y_observer_trip_master(trip_number)
Referenced by:
  TABLE "y_ctn_fishing" CONSTRAINT "fk_y_ctn_fishing_voyage" FOREIGN KEY (trip_number, start_voyage_number)
   REFERENCES y_ctn_voyage(trip_number, voyage_number)
  TABLE "y_ctn_incident" CONSTRAINT "fk_y_ctn_incident_voyage" FOREIGN KEY (trip_number, voyage_number)
   REFERENCES y_ctn_voyage(trip_number, voyage_number)
  TABLE "y_ctn_sighting" CONSTRAINT "fk_y_ctn_sighting_voyage" FOREIGN KEY (trip_number, voyage_number)
   REFERENCES y_ctn_voyage(trip_number, voyage_number)
  TABLE "y_ctn_status" CONSTRAINT "fk_y_ctn_status_voyage" FOREIGN KEY (trip_number, voyage_number)
   REFERENCES y_ctn_voyage(trip_number, voyage_number)

Table y_error_message

Comment: Error messages and associated descriptions.

Column	Type	Null?	Description
error_message_number	integer	No	Number identifying the error detected.
error_description	character varying(512)	No	The general description of the error.
error_procedure	character(1)		
return_type_key	integer		

Indexes:
"pk_y_error_message" PRIMARY KEY, btree (error_message_number)
Referenced by:
TABLE "y_sys_stage_error_log" CONSTRAINT "fk_y_sys_st_reference_y_error_" FOREIGN KEY (error_message_number)
REFERENCES y_error_message(error_message_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_error_message_liua

Comment:

Column	Type	Null?	Description
error_message_number	integer		
error_description	character varying(512)		
error_procedure	character(1)		
return_type_key	integer		

Table y_lfs_catch

Comment: Catch data per station, for methods other than trawl, including BLL.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	Sequential identifier for each station (tow or set).
species	character(3)	No	Code to identify the species caught on the set.
discard_status	character varying(3)		Code to identify the discard status.
discard_status_lookup	numeric(9,0)		System generated Lookup key associated with discard status.
number_of_fish	integer		Number of fish of this species in the catch.
catch_weight	numeric(11,3)		The weight for the species caught in kilograms.
catch_weight_method	character varying(4)		Code to identify the method of identifying catch weight at sea.
weight_method_part1	character(1)		Part 1 of the weight method, weight device for BLL.
weight_method_part1_lookup	numeric(9,0)		System generated Lookup key associated with the catch weight method code part 1.
weight_method_part2	character varying(3)		Part 2 of the weight method, ie analysis method.
weight_method_part2_lookup	numeric(9,0)		System generated Lookup key associated with the catch weight method code part 2.
fishing_event_catch_key	numeric(10,0)	No	System generated unique key to identify the fishing_event_catch.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this row was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_y_lfs_catch" PRIMARY KEY, btree (fishing_event_catch_key)
Foreign-key constraints:
  "fk_y_lfs_catch_ref" FOREIGN KEY (trip_number, station_number)
   REFERENCES y_lfs_station(trip_number, station_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_lfs_catch_restore

Comment: Catch data per station, for methods other than trawl, including BLL.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	Sequential identifier for each station (tow or set).
species	character(3)	No	Code to identify the species caught on the set.
discard_status	character varying(3)		Code to identify the discard status.
discard_status_lookup	numeric(9,0)		System generated Lookup key associated with discard status.
number_of_fish	integer		Number of fish of this species in the catch.
catch_weight	numeric(11,3)		The weight for the species caught in kilograms.
catch_weight_method	character varying(4)		Code to identify the method of identifying catch weight at sea.
weight_method_part1	character(1)		Part 1 of the weight method, weight device for BLL.
weight_method_part1_lookup	numeric(9,0)		System generated Lookup key associated with the catch weight method code part 1.
weight_method_part2	character varying(3)		Part 2 of the weight method, ie analysis method.
weight_method_part2_lookup	numeric(9,0)		System generated Lookup key associated with the catch weight method code part 2.
fishing_event_catch_key	numeric(10,0)	No	System generated unique key to identify the fishing_event_catch.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this row was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_y_lfs_catch_restore" PRIMARY KEY, btree (fishing_event_catch_key)
Foreign-key constraints:
  "fk_y_lfs_catch_ref" FOREIGN KEY (trip_number, station_number)
   REFERENCES y_lfs_station(trip_number, station_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_lfs_catch_restore_2

Comment: Catch data per station, for methods other than trawl, including BLL.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	Sequential identifier for each station (tow or set).
species	character(3)	No	Code to identify the species caught on the set.
discard_status	character varying(3)		Code to identify the discard status.
discard_status_lookup	numeric(9,0)		System generated Lookup key associated with discard status.
number_of_fish	integer		Number of fish of this species in the catch.
catch_weight	numeric(11,3)		The weight for the species caught in kilograms.
catch_weight_method	character varying(4)		Code to identify the method of identifying catch weight at sea.
weight_method_part1	character(1)		Part 1 of the weight method, weight device for BLL.
weight_method_part1_lookup	numeric(9,0)		System generated Lookup key associated with the catch weight method code part 1.
weight_method_part2	character varying(3)		Part 2 of the weight method, ie analysis method.
weight_method_part2_lookup	numeric(9,0)		System generated Lookup key associated with the catch weight method code part 2.
fishing_event_catch_key	numeric(10,0)	No	System generated unique key to identify the fishing_event_catch.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this row was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_y_lfs_catch_restore_2" PRIMARY KEY, btree (fishing_event_catch_key)
Foreign-key constraints:
  "fk_y_lfs_catch_ref" FOREIGN KEY (trip_number, station_number)
   REFERENCES y_lfs_station(trip_number, station_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_lfs_fish_biological

Comment: Biological data for individual squid & fish specimens sampled by observers.

Column	Type	Null?	Description
biological_key	numeric(9,0)	No	Unique key to identify each fishing event biological record.
trip_number	integer	No	Trip number allocated by the observer programme.
tow_number	integer	No	Sequential identifier for each tow.
species	character(3)	No	Species code for the squid or fish being sampled.
grade	character varying(8)		Grade where sample taken on graded fish. Scampi; 1..5, A,B(tails) & Jumbo.
fish_number	integer	No	Sequential identifying number of an individual fish.
copulated_code_yn	character(1)		Code to identify whether the Female copulated (Yes/No).
fish_sex_code	integer		Code to Identify the sex of a fish e.g. 0=unsexed, 1=male, 2=female, 3=unknown (unable to determine).
fish_sex_lookup_key	numeric(9,0)	No	System generated lookup key associated with the fish sex code.
fish_length	integer		Dorsal mantle length (DML) of the squid, or length of the fish, in cm.
gonad_code	smallint		Code for the stage of development of the fishes gonads.
gonad_lookup_key	numeric(9,0)		System generated lookup key associated with the gonad code.
fish_weight	numeric(9,3)		Weight of the individual fish or squid in kg.
length_code	character varying(4)		Measurement method code relating to fish_length, e.g. 1 = Fork Length, 2 = Total length, 3 = Standard length, 4 = Mantle length etc.
length_lookup_key	numeric(9,0)		System generated lookup key associated with the length code.
fish_length2	integer		Second length measurement of the fish using a different measurement method to fish_length.
length2_code	character varying(4)		Measurement method code for fish_length2.
length2_lookup_key	numeric(9,0)		System generated lookup key associated with the length2 code.
age_material_collected	character(1)		Age material was collected from the fish: Y = Yes scheduled otolith, X = Yes, choosen extra (NR) otolith, N = No otolith.
age_material_lookup_key	numeric(9,0)		System generated lookup key associated with the age material collected.
shell_state	character(1)		Shell state for SCI: 0 = soft, 1 = hard.
shell_state_lookup_key	numeric(9,0)		System generated lookup key associated with the shell state.
catch_sample_key	numeric(9,0)	No	System generated key to identify each fishing_event_catch_sample.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.

created_date	date	No	Date this row was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_y_lfs_fish_biological" PRIMARY KEY, btree (biological_key)
  "ui_y_lfs_fish_biological" UNIQUE, btree (trip_number, tow_number, species, grade, fish_number)
Check constraints:
  "y_biological_copulated_check" CHECK (copulated_code_yn = '0'::bpchar OR copulated_code_yn = '1'::bpchar)

Table y_lfs_general_catch_sample

Comment: Catch data by tow for all species used for sampling.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
tow_number	integer	No	Sequential identifier for each tow.
species	character(3)	No	Species code for a species sampled on the tow.
sub_sample_number	integer		Sub-sampling number for species JMM, JMN or JMD. A maximum of four sub-samples per species per tow.
grade	character varying(10)		Grade where sample taken on graded fish. Scampi: 1..5, A,B(tails), Jumbo & Standard.
sample_weight	numeric(11,3)		Weight (kg) of the sample taken from the whole catch of the tow, or of the sub-sample catch if sub_sample_number is No.
sample_weight_method_code	integer		Code for the method of obtaining the sample weight. Codes were changed sometime between 2002 and 2009. Up to at least 2002: 1 = Salter scales, 2 = SeaWay scales, 3 = Platform Scales, 4 = Accurate electronic scales (vessels), 99 = Other weighing method or weight estimated. See also where lookup_code_type_key = 163 for later codes.
sample_weight_meth_lookup_key	numeric(9,0)	No	System generated lookup key associated with the sample weight method code.
catch_weight	numeric(11,3)		Weight (kg) of the catch of the species from the tow.
catch_weight_method_code	character varying(4)		Up to 3 character code for the method of obtaining catch weights at sea.
weight_method_loc_lookup_key	numeric(9,0)	No	Lookup key associated with the weight method location section of the catch weight method code.
weight_method_anal_lookup_key	numeric(9,0)	No	Lookup key associated with the weight method analysis section of the catch weight method code.
male_length_wgt_parm_code	integer		Unique integer code for the male length/weight regression parameters.
male_len_wgt_parm_lookup_key	numeric(9,0)	No	Lookup key associated with the male length weight parameter.
female_length_wgt_parm_code	integer		Unique integer code for the female length/weight regression parameters.
female_len_wgt_parm_lookup_key	numeric(9,0)	No	Lookup key associated with the female length weight parameter.

species_length_wgt_parm_code	integer		Unique integer code for the species length/weight regression parameters.
spec_len_wgt_parm_lookup_key	numeric(9,0)	No	Lookup key associated with the species weight parameter.
catch_sample_key	numeric(9,0)	No	System generated key of the associated fishing event catch sample.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:

"y_lfs_general_catch_sample_pkey" PRIMARY KEY, btree (catch_sample_key)
"y_lfs_general_catch_sample_grade_null_ui" UNIQUE, btree (trip_number, tow_number, species, sub_sample_number) WHERE grade IS NULL
"y_lfs_general_catch_sample_grade_sub_null_ui" UNIQUE, btree (trip_number, tow_number, species) WHERE grade IS NULL AND sub_sample_number IS NULL
"y_lfs_general_catch_sample_grade_ui" UNIQUE, btree (trip_number, tow_number, species, sub_sample_number, grade)
"y_lfs_general_catch_sample_sub_null_ui" UNIQUE, btree (trip_number, tow_number, species, grade) WHERE sub_sample_number IS NULL

Table y_lfs_length_frequency

Comment: Length frequency data for a length class for any one species.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
tow_number	integer	No	Sequential identifier for each tow.
species	character(3)	No	Species code for the species being sampled on the tow.
grade	character varying(8)		Designated grade for the length class sampled.
sub_sample_number	integer		Sub-sampling number for species JMM, JMN or JMD. A maximum of four sub-samples per species per tow.
length	integer	No	Length class for the length frequency (lowest whole cm, except Crustacea in mm).
length_measure_code	character(1)		1 character code for the method of measuring length.
length_measure_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the length measure code.
male_number	integer		Frequency of males in the length class.
female_number	integer		Frequency of females in the length class.
female_stage1	integer		Frequency of the female stage one gonads.
female_stage2	integer		Frequency of the female stage two gonads.
female_stage3	integer		Frequency of the female stage three gonads.
female_stage4	integer		Frequency of the female stage four gonads.
female_stage5	integer		Frequency of the female stage five gonads.
total_fish	integer	No	Frequency of all fish in the length class, including unsexed fish.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	System Generated Key of the associated fishing event for the station.
length_frequency_key	numeric(9,0)	No	Unique key for the length frequency class.
male_stage1	integer		Frequency of the male stage one gonads.
male_stage2	integer		Frequency of the male stage two gonads.
male_stage3	integer		Frequency of the male stage three gonads.
male_stage4	integer		Frequency of the male stage four gonads.
male_stage5	integer		Frequency of the male stage five gonads.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.

error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
"ui_lfs_catch_grade_sample_length" UNIQUE, btree (trip_number, tow_number, species, grade, sub_sample_number, length)
"ui_lfs_catch_sample_length_grade_null" UNIQUE, btree (trip_number, tow_number, species, sub_sample_number, length) WHERE grade IS NULL

Foreign-key constraints:
"fk_y_lfs_lf_species" FOREIGN KEY (species) REFERENCES z_species(code)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_lfs_station

Comment: Details common to both trawl (sampled) and longline sets, including date, depth, and position of the tow.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	Sequential identifier for each station (tow or set).
start_date	date		Start date of the tow or set.
target_species	character(3)		Species code for the species being targeted.
start_latitude	numeric(5,1)		Start position latitude (format DDMM.m).
start_longitude	numeric(6,1)		Start position longitude (format DDDMM.m).
start_bottom_depth	integer		Depth (metres) to the bottom (from either the net or the vessel) at the start of the tow.
end_bottom_depth	integer		Depth (metres) to the bottom (from either the net or the vessel) at the end of the tow.
end_date	date		Finish date of the tow or set.
end_latitude	numeric(5,1)		End position latitude (format DDMM.m).
end_longitude	numeric(6,1)		End position longitude (format DDDMM.m).
fishing_method	character varying(3)		Fishing method code.
start_time	time without time zone		Start time of the tow or set.
end_time	time without time zone		Finish time of the tow or set.
start_display_longitude	character(10)		Start Longitude formatted for display purposes in format DDD:MM.m[E|W], e.g. 172:34.5E with E for East.
end_display_longitude	character(10)		End Longitude formatted for display purposes in format DDD:MM.m[E|W], e.g. 172:34.5E with E for East.
start_display_latitude	character(9)		Start Latitude formatted for display purposes in format DD:MM.mS.
end_display_latitude	character(9)		End Latitude formatted for display purposes in format DD:MM.mS.
area	character(5)		Area code. Usually Fisheries Management Area (FMA) codes.
start_east_west	character(1)		Start position meridian, E or W.
end_east_west	character(1)		End position meridian, E or W.
end_setting_date	date		End date of setting (YYYY-mm-dd).
end_setting_time	time without time zone		End time of setting (NZST 24hr).
end_setting_latitude	numeric(5,1)		Latitude at end of setting (DDMM.m format).

end_setting_longitude	numeric(6,1)	Longitude at end of setting (DDDMM.m format).
start_haul_date	date	Start date of hauling (YYYY-mm-dd).
start_haul_time	time without time zone	Start time of hauling (NZST 24hr).
start_haul_latitude	numeric(5,1)	Latitude at start of hauling (DDMM.m format).
start_haul_longitude	numeric(6,1)	Longitude at start of hauling (DDDMM.m format).
end_setting_display_latitude	character(9)	End Latitude formatted for display purposes in format DD:MM.mS.
end_setting_display_longitude	character(10)	End Longitude formatted for display purposes in format DDD:MM.m[E|W], e.g. 172:34.5E with E for East.
start_haul_display_latitude	character(9)	Start Latitude formatted for display purposes in format DD:MM.mS.
start_haul_display_longitude	character(10)	Start Longitude formatted for display purposes in format DDD:MM.m[E|W], e.g. 172:34.5E with E for East.
end_setting_bottom_depth	integer	Seabed depth at end of setting (m).
start_haul_bottom_depth	integer	Seabed depth at start of hauling (m).
cloud_cover_setting	integer	Percentage cloud cover at start of setting.
wind_direction_setting	integer	Wind direction (0-359 deg) at start of setting.
beaufort_setting	character(2)	Beaufort scale that represents the sea state at start of setting. Refer to lookup key.
beaufort_setting_lookup_key	numeric(9,0)	Refer to x_lookup_code (lookup_code_type_key=22)
vessel_speed_setting	numeric(3,1)	Vessel speed (knots) during setting.
conditions_timing_haul	character(1)	Period during hauling when conditions were assessed: S = Start M = Mid-point E = End. Refer to lookup key
conditions_timing_haul_lookup_key	numeric(9,0)	Refer to x_lookup_code (lookup_code_type_key=191)
time_conditions_assessed_haul	time without time zone	Time during hauling when conditions were assessed (NZST 24hr).
cloud_cover_haul	integer	Percentage cloud cover observed during S/M/E period of hauling.
wind_direction_haul	integer	Wind direction (0-359 deg) as observed during S/M/E period of hauling
beaufort_hauling	character(2)	Beaufort scale that represents the sea state at S/M/E period of hauling. Refer to lookup key.
beaufort_hauling_lookup_key	numeric(9,0)	Refer to x_lookup_code (lookup_code_type_key=22)
vessel_speed_hauling	numeric(3,1)	Vessel speed (knots) at S/M/E period of hauling.

trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated key to identify the event associated with the lfs trawl event.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
fishing_event_type_key	numeric(9,0)	No	The system generated key associated with the type of fishing event (e.g. Trawl Effort, Surface Lining Effort) based on Method
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
  "pk_y_lfs_station" PRIMARY KEY, btree (trip_number, station_number)
Check constraints:
  "date_check" CHECK (start_date <= end_date)
Foreign-key constraints:
  "fk_y_lfs_station_ref" FOREIGN KEY (trip_number)
   REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_y_lfs_station_trg_species_ref" FOREIGN KEY (target_species)
   REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
  TABLE "y_bll_line" CONSTRAINT "fk_y_bll_line_ref" FOREIGN KEY (trip_number, station_number)
   REFERENCES y_lfs_station(trip_number, station_number) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "y_lfs_catch" CONSTRAINT "fk_y_lfs_catch_ref" FOREIGN KEY (trip_number, station_number)
   REFERENCES y_lfs_station(trip_number, station_number) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "y_lfs_catch_restore" CONSTRAINT "fk_y_lfs_catch_ref" FOREIGN KEY (trip_number, station_number)
   REFERENCES y_lfs_station(trip_number, station_number) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "y_lfs_catch_restore_2" CONSTRAINT "fk_y_lfs_catch_ref" FOREIGN KEY (trip_number, station_number)
   REFERENCES y_lfs_station(trip_number, station_number) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "y_lfs_trawl" CONSTRAINT "fk_y_lfs_trawl_ref" FOREIGN KEY (trip_number, station_number)
   REFERENCES y_lfs_station(trip_number, station_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_lfs_trawl

Comment: Details of the tows for each trip for which length frequency data were collected, that only relate to trawl.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	Sequential identifier for each station (tow).
gear_code	character varying(5)		Up to 5 character code for the type of fishing gear used for the tow.
start_net_depth	integer		Depth of the trawl net at the start of the tow in metres.
vessel_speed	numeric(7,3)		Mean speed of the vessel during the tow in knots.
end_net_depth	integer		Depth of the trawl net at the end of the tow in metres.
surface_temperature	numeric(3,1)		Sea surface temperature (decimal degrees C).
headline_temperature	numeric(3,1)		Sea temperature at headline (degrees Celsius).
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
fishing_event_type_key	numeric(9,0)	No	The system generated key associated with the type of fishing event (e.g. Trawl Effort, Surface Lining Effort) based on Method
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.
headline_height	numeric(4,1)		Headline height (m) of the fishing gear during the tow.

Indexes:
  "pk_y_lfs_trawl" PRIMARY KEY, btree (trip_number, station_number)
  "ui_y_lfs_trawl" UNIQUE, btree (fishing_event_key)
Foreign-key constraints:
  "fk_y_lfs_trawl_ref" FOREIGN KEY (trip_number, station_number)
   REFERENCES y_lfs_station(trip_number, station_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_mitigation_description

Comment: Descriptions of mitigation devices.

Column	Type	Null?	Description
mitigation_descript_key	numeric(9,0)	No	System generated key to identify the mitigation device description.
device_type	character varying(3)		Code for the type of mitigation device.
description	character varying(80)		Description of the mitigation device.

Indexes:
  "pk_mitigation_descript_key" PRIMARY KEY, btree (mitigation_descript_key)
  "ui_y_mitigation_description" UNIQUE, btree (device_type)
Referenced by:
  TABLE "y_warp_strike_device" CONSTRAINT "fk_y_warp_strike_device_md" FOREIGN KEY (device_type)
   REFERENCES y_mitigation_description(device_type) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_mitigation_event

Comment: Coded details of any mitigation events during an observation sampling period.

Column	Type	Null?	Description
mitigation_event_key	numeric(10,0)	No	System generated unique key to identify the mitigation event.
warpstrike_sample_key	numeric(10,0)	No	System generated key of the warp strike sample.
fishing_event_key	numeric(10,0)	No	System generated key of the fishing event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_code	character(1)		Code for the mitigation event, refer table x_mitigation_event_code.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date this record was created.
event_lookup_key	numeric(9,0)		System generated lookup key associated with the event_code

Indexes:
  "pk_y_mitigation_events" PRIMARY KEY, btree (mitigation_event_key)
Foreign-key constraints:
  "fk_y_mitigation_event_ref" FOREIGN KEY (warpstrike_sample_key)
   REFERENCES y_warp_strike_sample(warpstrike_sample_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_nfb_autopsy

Comment: Groomed Nonfish bycatch autopsy and photo id data, including species identification for seabirds. Used to update y_nfb_nonfish_catch.
Excludes z_nfb_autopsy records where autopsy_type = Interaction.

Column	Type	Null?	Description
autopsy_number	integer		Autopsy number assigned by the autopsy person.
autopsy_date	date		The date when the autopsy provider did the autopsy of the bird or processing of the photograph.
autopsy_type	character varying(16)		Species identification method, eg Photo or Autopsy.
autopsy_status	character varying(40)		New column from 1Jul14. â€˜Extract and Photoâ€™ means the autopsy provider received a photograph (or took one of the autopsy bird) and it was listed and matched to observer information in the MPI COD extract. â€˜Photo onlyâ€™ means a photograph was received from the Observer, but there is no matching information in the MPI COD extract. â€˜Extract onlyâ€™ means a seabird interaction was recorded by the Observers in the MPI COD extract, but no photograph was taken (or if one was, the autopsy provider had not received it).
vessel_name	character varying(50)		The name of the vessel.
trip_number	integer		Trip number allocated by the observer programme.
station_number	integer		Station number as tow or set number, generally from observer label. Corrected details were put in brackets. If there is a 1a, 1b, etc. this usually means there was either two dead birds in the same bag with only one observer card or an extra wing in the bag meaning there was an additional interaction for that observer card.
specimen_number	character varying(24)		Specimen number assigned by the observer.
extract_specimen_no	character varying(8)		Specimen or sample number assigned by the autopsy person to match the cod extract data, from data received 4Jul2016 and subsequently.
capture_date	date		Date of capture. The date is primarily from the observer label when listed. If it is not recorded, it is taken from the COD extract.
time	character varying(5)		Time as recorded by the observer.
latitude	character varying(12)		Latitude as recorded by the observer on the specimen label.
longitude	character varying(16)		Longitude as recorded by the observer on the specimen label.

observer_name	character varying(50)	The name of the observer.
observer_species_code	character(3)	3 character species code recorded by the observer.
observer_species_name	character varying(64)	The species common name assigned by the observer.
common_name	character varying(50)	Common name for the species confirmed from autopsy.
scientific_name	character varying(64)	Scientific (latin) name confirmed from autopsy.
species	character(3)	Species code as a result of positive identification e.g. from autopsy.
sex	character varying(8)	Sex of the animal from autopsy.
age	character varying(16)	Age classification of the animal from autopsy.
vessel_type	character varying(32)	The fishing method(s) used by the vessel.
position_desc	character varying(45)	Position description, generated from the lat/long on the observer sheet primarily, but if it is not recorded it is generated from the COD extract.
fat_score	character(8)	Fat score 1-5 from autopsy, based on the relative amount of subcutaneous fat and fat on and around organs: 1 = no fat, to 5 = extremely fat.
moult	character varying(140)	Moult description regarding brood patch etc from autopsy.
likely_death	character varying(24)	Likely cause of death from autopsy.
stomach	character varying(90)	Stomach contents from autopsy.
gizzard	character varying(70)	Gizzard contents from autopsy.
obs_analysis	character varying(50)	New column from 1Jul14. Observer identification of the seabird matched that of the autopsy provider (AP). â€˜ID Correctâ€™ is when Observer ID match, â€˜ID correct to species groupâ€™ is when observers say wandering albatross and AP confirm Gibsonâ€™s albatross, or cape petrels and AP confirm Snares cape petrel, etc., ID presumed correct (no photo to confirm) means when observers have given an ID for a bird that was caught and released alive at sea and no photograph was taken (or if it was we havenâ€™t received it to date), so we have to assume that the observer has identified the bird correctly. [Hence it lines up with the Status column stating Extract only].
received_date	date	Date that the data file, ie record was received.
comments	character varying(512)	
error_highest_level	smallint	The highest error level associated with the error messages for the row.
error_count	integer	The number of error messages for the row.
error_text	character varying(512)	Colon separated short error texts for errors for the row.
created_date	date	Date this row was created.

specimen_id	character varying(25)	Specimen identification value, generated by (trip_number*1000)+station_number concatenate specimen_number.

Table y_nfb_nonfish_catch

Comment: Catch and biological details of non-fish bycatch.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
interaction_number	integer	No	Sequential number throughout the trip and across voyages that corresponds with the event. Column name previously specimen_number for NFBC.
station_number	integer	No	Sequential identifier for each station (tow or set).
observation_date	date		The date of the first observation of the capture (New Zealand Standard Time). Column name previously s_date for NFBC defined as Start date of tow or set.
observation_time	integer		The time of the first observation of the capture (New Zealand Standard Time). Column name previously caught_time for NFBC.
observer_code	character(5)		4 character unique observer code, usually the first initial followed by the first 3 letters of observers surname.Â
on_duty	character(1)		If observer was on duty when the interaction occurred (Y/N).
witnessed	character(1)		If observer witnessed the interaction (Y/N).
animal_seen	character(1)		If the observer has seen the animal at any point of the interaction (Y/N).
observer_species	character(3)	No	Species code identified by observer.
species	character(3)		Species Code as a result of positive identification e.g. after post mortem.
species_id_method	character(1)		Method used to verify species post-mortem. From z_nfb_autopsy.autopsy_type. A=Autopsy, P=Photo, p=Photo but observer did not record photo taken. Added 30th April 2015.
end_status	character varying(4)		Code to indicate what happened to the animal at the end of the incident. Column name previously marked_code for NFBC defined as Whether the specimen was retained or tagged and returned.
end_status_lookup_key	numeric(9,0)	No	System generated lookup key associated with the end status.
life_status	integer	No	Life status when first sighted: 1 = Alive 2 = Dead (Showing no signs of life) 4 = Decomposing. Column previously alive_code for NFBC. Had an additional value 3=killed .
life_status_lookup_key	numeric(9,0)	No	System generated lookup key associated with the life status.

interaction_type	character(1)	Code for the type of interation: F = Caught in the fishing gear M = Caught in seabird mitigation device L = Deck impact/deck landing B = Brought on board R = Caught in recreational gear O = Other U = Unknown.
interaction_type_lookup_key	numeric(9,0)	System generated lookup key associated with the interaction type.
capture_location	character(2)	Code for the capture location (note that some codes are method specific). Previously capture_method for NFBC.
capture_location_lookup_key	numeric(9,0)	System generated lookup key associated with the capture location.
net_caught_in	character(1)	Code for the net that this specimen was caught in, for Scampi trawling. P=Port, S=Starboard, C=Central.
body_part	character(1)	Code for part of the body was caught: E = Entire body caught W = Caught by wing F = Caught by flipper/feet H = Caught by head M = Caught by mouth U = Unknown.
body_part_lookup_key	numeric(9,0)	System generated lookup key associated with the body part.
injury_status	character varying(5)	Injury status of the animal.Column name previously injuries for NFBC.
injury_status_lookup_key	numeric(9,0)	System generated lookup key associated with the injury status.
samples_taken	character varying(5)	Codes for samples taken, as single letter codes.
samples_lookup_key	numeric(9,0)	System generated lookup key associated with the samples_taken.
whole_kept_yn	character(1)	Whether the whole specimen was kept (0 = No, 1 = Yes).
length_cm	integer	Length for animals that are captured where measuring is part of the sampling protocol - for PSI data. Previously for NFBC data - Standard length for seals, Fork length for dolphins.â€•
measure_method	character(1)	Measurement method used: A = Actual length E = Estimated length

observer_sex_code	integer		Observer determined code to Identify the sex of a fish e.g. 1=male, 2=female, 3=unknown (unable to determine), 4=Did not attempt to sex. Column previously included 0=Unsexed.
observer_sex_lookup_key	numeric(9,0)	No	System generated lookup key associated with the observer sex code.
sex_code	integer		Code to Identify the sex of a fish e.g. 1=Male, 2=Female, 3=Unknown (unable to determine), 4=Did not attempt to sex. Column previously included 0=Unsexed. Data e.g. from post mortem.
sex_lookup_key	numeric(9,0)	No	System generated lookup key associated with the sex_code.
csp_tag_number	integer		CSP tag number the observer attaches if they tag a dead animal before returning it to the sea or before packaging it for autopsy (post-mortem tag).
tag_capture	character varying(16)		Tag number if the animal has a pre-existing tag on it.
tag_id	character varying(32)		Tag or band number existing on specimen, or tag number that the observer attached, from NFBC form(s).
operating_within_plans	character(1)		Operating in accordance with both the Protected Species Risk Management Plan (PSRMP) and Vessel Management Plan (VMP). (Y/N).
image_filename	character varying(256)		Image filenames. Column previously image for NFBC -defined as Flag to record that a photograph was taken of the bycatch.
age_code	character varying(7)		Maturity for seabirds A=adult, AB=adult breeder, AN=adult nonbreeder, SA=subadult, I=immature, J=juvenile. Age mammals, estimated e.g. growth increments in years. Data e.g. from post mortem.
age_code_lookup_key	numeric(9,0)	No	System generated Lookup key associated with the age code.
actual_age_code	character varying(7)		Actual age for marine mammals.
girth	integer		Girth (mm) at posterior margin of foreflippers.
blubber_mm	integer		Blubber thickness in millimetres.
head_yn	character(1)		Whether the head was kept (0 = No, 1 = Yes).
leg_yn	character(1)		Whether the leg was kept (0 = No, 1 = Yes).
ovary_yn	character(1)		Whether an ovary sample was taken (0 = No, 1 = Yes).
stomach_yn	character(1)		Whether a stomach sample was taken (0 = No, 1 = Yes).
teeth_yn	character(1)		Whether teeth were collected (0 = No, 1 = Yes).
skin_yn	character(1)		Whether a skin sample was taken (0 = No, 1 = Yes).
blubber_yn	character(1)		Whether a blubber sample was taken (0 = No, 1 = Yes).
muscle_yn	character(1)		Whether a muscle sample was taken (0 = No, 1 = Yes).

other_sample_yn	character(1)		Whether another sample was taken (0 = No, 1 = Yes), details held in comments.
observed_yn	character(1)		Whether observed caught species during fishing around vessel, (0 = No, 1 = Yes).
seen_number	integer		Number of species seen if observed during tow/set, recorded once against first specimen recorded.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	Fishing event key derived from the trip key and station number.
bycatch_incident_key	numeric(9,0)	No	System generated key to identify the event associated with the fishing event.
bycatch_incident_catch_key	numeric(9,0)	No	System generated unique key to identify the associated bycatch_incident_catch, ie bycatch incident interaction key.
comments	character varying		Additional comments about the interaction. Column previously Remarks for NFBC.
created_date	date	No	Date this row was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Colon separated short error texts for errors for the row.

Indexes:
  "pk_y_nfb_nonfish_catch" PRIMARY KEY, btree (bycatch_incident_catch_key)
  "ui_y_nfb_nonfish_catch" UNIQUE, btree (trip_number, station_number, observation_time, observer_species, interaction_number)
Foreign-key constraints:
  "fk_y_nfb_nonfish_catch__obs_species" FOREIGN KEY (observer_species)
   REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_y_nfb_nonfish_catch__species" FOREIGN KEY (species)
   REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_y_nfb_nonfish_catch_ref" FOREIGN KEY (trip_number, station_number, observation_time)
   REFERENCES y_nfb_nonfish_station(trip_number, tow_number, caught_time)

Table y_nfb_nonfish_catch_2019_format

Comment: Catch and biological details of non-fish bycatch.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
tow_number	integer	No	Sequential identifier for each tow.
caught_time	integer	No	Time caught to distinguish bycatch incidents.
specimen_number	integer	No	Sequential number for each specimen.
observer_species	character(3)	No	Species code identified by observer.
species	character(3)		Species Code as a result of positive identification e.g. after post mortem.
species_id_method	character(1)		Method used to verify species post-mortem. From z_nfb_autopsy.autopsy_type. A=Autopsy, P=Photo, p=Photo but observer did not record photo taken. Added 30th April 2015.
length_cm	integer		Standard length for seals, Fork length for dolphins.
girth	integer		Girth (mm) at posterior margin of foreflippers.
blubber_mm	integer		Blubber thickness in millimetres.
sex_code	integer		Code to Identify the sex of a fish e.g. 0=Unsexed, 1=Male, 2=Female, 3=Unknown (unable to determine).
sex_lookup_key	numeric(9,0)		System generated lookup key associated with the sex_code.
observer_sex_code	integer		Observer determined code to Identify the sex of a fish e.g. 0=unsexed, 1=male, 2=female, 3=unknown (unable to determine).
observer_sex_lookup_key	numeric(9,0)	No	System generated lookup key associated with the sex code.
age_code	character varying(7)		Maturity for seabirds A=adult, AB=adult breeder, AN=adult nonbreeder, SA=subadult, I=immature, J=juvenile. Age mammals, estimated e.g. growth increments in years.
age_code_lookup_key	numeric(9,0)	No	System generated Lookup key associated with the age code.
actual_age_code	character varying(7)		Actual age for marine mammals.
actual_age_code_lookup_key	numeric(9,0)	No	System generated key to identify the actual age.
tag_id	character varying(32)		Tag or band number on specimen.
alive_code	integer	No	Whether the specimen was taken alive, e.g. 1= alive, 2= dead, 3= killed, 4= decomposing.
alive_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the alive code.

marked_code	character varying(4)		Whether the specimen was retained or tagged and returned i.e. R= retained, D= discarded unmarked, M=Marked or tagged & discarded.
marked_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the marked code.
whole_kept_yn	character(1)		Whether the whole specimen was kept (0 = No, 1 = Yes).
head_yn	character(1)		Whether the head was kept (0 = No, 1 = Yes).
leg_yn	character(1)		Whether the leg was kept (0 = No, 1 = Yes).
ovary_yn	character(1)		Whether an ovary sample was taken (0 = No, 1 = Yes).
stomach_yn	character(1)		Whether a stomach sample was taken (0 = No, 1 = Yes).
teeth_yn	character(1)		Whether teeth were collected (0 = No, 1 = Yes).
skin_yn	character(1)		Whether a skin sample was taken (0 = No, 1 = Yes).
blubber_yn	character(1)		Whether a blubber sample was taken (0 = No, 1 = Yes).
muscle_yn	character(1)		Whether a muscle sample was taken (0 = No, 1 = Yes).
other_sample_yn	character(1)		Whether another sample was taken (0 = No, 1 = Yes), details held in comments.
observed_yn	character(1)		Whether observed caught species during fishing around vessel, (0 = No, 1 = Yes).
seen_number	integer		Number of species seen if observed during tow/set, recorded once against first specimen recorded.
net_caught_in	character(1)		Code for the net that this specimen was caught in, for Scampi trawling. P=Port, S=Starboard, C=Central.
remarks	character varying(512)		Additional remarks about the specimen e.g more information about other sample.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	Fishing event key derived from the trip number and set number.
bycatch_incident_key	numeric(9,0)	No	System generated key to identify the event associated with the fishing event.
bycatch_incident_catch_key	numeric(9,0)	No	System generated unique key to identify the associated bycatch_incident_catch.
capture_method	character(1)		Method of capture code.
capture_method_lookup_key	numeric(9,0)		System generated lookup key associated with the capture method.
injuries	character varying(5)		Injury status codes, as single letter codes.
injuries_lookup_key	numeric(9,0)		System generated lookup key associated with the injuries column.
samples_taken	character varying(5)		Codes for samples taken, as single letter codes.
samples_lookup_key	numeric(9,0)		System generated lookup key associated with the samples_taken.

image	character(1)		Flag to record that a photograph was taken of the bycatch.
s_date	date		Start date of tow or set.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_nfb_nonfish_catch_2019_format" PRIMARY KEY, btree (bycatch_incident_catch_key)
"ui_y_nfb_nonfish_catch_2019_format" UNIQUE, btree (trip_number, tow_number, caught_time, observer_species, specimen_number)
Foreign-key constraints:
"fk_y_nfb_nonfish_catch_2019_format__obs_species" FOREIGN KEY (observer_species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_nfb_nonfish_catch_2019_format__species" FOREIGN KEY (species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_nfb_nonfish_station

Comment: Details for stations with non-fish bycatch including position.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
tow_number	integer	No	Sequential identifier for each tow.
caught_time	integer	No	Time caught if known 24 hour format, NZST.
caught_date	date		The date (from the associated tow) and time (from the nonfish station) when the bycatch was taken
caught_latitude	numeric(5,1)		Caught position latitude (format DDMM.m).
caught_longitude	numeric(6,1)		Caught position longitude (format DDDMM.m).
caught_east_west	character(1)		Caught position meridian, E or W.
gear_depth	integer		Depth of gear in metres.
wind_knots	integer		Wind speed in knots.
wind_direction	integer		Wind direction in degrees 0 to 359.
sea_state_beaufort	smallint		Sea state coded on the Beaufort scale.
cloud_cover	smallint		Code to identify cloud cover between 0 (clear) and 8 (full cover).
offal_discard	character varying(4)		Code identifying type of offal discard.
tori_pole_used_yn	character(4)		Whether a tori pole was used: 0 = No, 1 = Yes.
bird_device_yn	character(1)		Whether a bird scaring device was used: 0 = No, 1 = Yes.
gear_event_yn	character(1)		Whether an event that affected the chance of catching a non-fish species took place: 0 = No, 1 = Yes.
bird_device_comments	character varying(64)		Comments about the bird scaring device.
surface_temperature	numeric(3,1)		Sea surface temperature (decimal degrees C).
headline_temperature	numeric(3,1)		Sea temperature at headline in degrees.
tow_type	character varying(3)		Code identifying the tow type 1= bottom throughout 2= midwater at relatively constant depth 3= midwater in a broad range of depths 4= mixed bottom & midwater.
tow_configuration	character(4)		Code for tow configuration, from part 2 of the fishing path, e.g. A = Straight line, E = Constant depth contour, etc.

tow_turns_number	integer		Number of turns during tow.
station_comments	character varying(540)		Comments about the non fish bycatch station.
tow_configuration_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Tow Configuration Code.
tow_type_lookup_key	numeric(9,0)	No	System generated Lookup key associated with the tow type code.
offal_discard_lookup_key	numeric(9,0)	No	System generated lookup key associated with the offal discard code.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	Fishing event key derived from the trip number and set number.
bird_device_comments_key	numeric(9,0)	No	System generated key for Bird Device Comments.
station_comments_key	numeric(9,0)	No	System generated key associated with the stations comments.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.
wingspread	integer		Distance between the wings of the net in metres, recorded on the 1995 version of Non-fish Bycatch Form.
bycatch_incident_key	numeric(9,0)	No	System generated unique key to identify the bycatch_incident (nonfish_station).

Indexes:
  "pk_y_nfb_nonfish_station" PRIMARY KEY, btree (trip_number, tow_number, caught_time)
  "ui_y_nfb_nonfish_station" UNIQUE, btree (bycatch_incident_key)
Check constraints:
  "y_nfb_station_beaufort_check" CHECK (sea_state_beaufort >= 0 AND sea_state_beaufort <= 12)
  "y_nfb_station_cloud_check" CHECK (cloud_cover >= 0 AND cloud_cover <= 8)
  "y_nfb_station_wind_check" CHECK (wind_knots >= 0)
Foreign-key constraints:
  "fk_y_nfb_nonfish_station_ref" FOREIGN KEY (trip_number)
   REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
  TABLE "y_nfb_nonfish_catch" CONSTRAINT "fk_y_nfb_nonfish_catch_ref" FOREIGN KEY (trip_number, station_number, observation_time)
   REFERENCES y_nfb_nonfish_station(trip_number, tow_number, caught_time)

Table y_observer_trip_comment

Comment: General comments associated with a trip.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
comments	character varying	No	Comments about the trip.
trip_comments_key	numeric(9,0)	No	System Generated unique key for the Trip Comments.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_observer_trip_comment" PRIMARY KEY, btree (trip_number)
Foreign-key constraints:
"fk_y_observer_trip_comment_ref" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_observer_trip_master

Comment: Header information common to a trip.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
vessel_key	numeric(9,0)		The Ministry of Fisheries allocated key for the vessel.
nation_code	character varying(6)		Nation of origin of the vessel. Can also be nation codes for charter companies.
observer_1_name	character varying(50)		Name of the first observer.
observer_2_name	character varying(50)		Name of the second observer.
trip_start_date	date	No	The first day of the trip.
trip_end_date	date	No	The last day of the trip.
callsign	character(8)		The radio callsign for the vessel.
vessel_name	character varying(50)		The name of the vessel for the observer trip.
origin_code	character(4)		Code to identify the origin of the data, e.g. SOP = Scientific Observer Programme, HMC = Hoki Management Company, ORM = Orange Roughy Management company, FRC = Fisheries Research Centre, CSP = Conservation Services Programme (DOC).
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
psi_interactions	character(1)		If there were protected species interactions for the trip (Y/N).
observer_key	numeric(9,0)		System generated key to identify the observer derived from the observer name.
observer2_key	numeric(9,0)		System generated key to identify the second observer derived from the observer name.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
  "pk_y_observer_trip_master" PRIMARY KEY, btree (trip_number)
  "ui_y_observer_trip_master__tk" UNIQUE, btree (trip_key)
  "ndx_y_obs_trip__end_date" btree (trip_end_date)
  "ndx_y_obs_trip__start_date" btree (trip_start_date)
  "ndx_y_obs_trip__vesselkey" btree (vessel_key)

Check constraints:
"start_date_check" CHECK (trip_start_date > '1986-04-01'::date)
Referenced by:
TABLE "x_sled_details" CONSTRAINT "fk_x_sled_details_ref" FOREIGN KEY (trip_key)
REFERENCES y_observer_trip_master(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_bird_baffler" CONSTRAINT "fk_y_bird_baffler_ref" FOREIGN KEY (trip_key)
REFERENCES y_observer_trip_master(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_ctn_voyage" CONSTRAINT "fk_y_ctn_voyage_trip_number" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number)
TABLE "y_lfs_station" CONSTRAINT "fk_y_lfs_station_ref" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_nfb_nonfish_station" CONSTRAINT "fk_y_nfb_nonfish_station_ref" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_observer_trip_comment" CONSTRAINT "fk_y_observer_trip_comment_ref" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_ps_activity" CONSTRAINT "fk_y_ps_activity_y_trip" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_ps_set" CONSTRAINT "fk_y_ps_set_y_trip" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_setnet_gear" CONSTRAINT "fk_y_setnet_gear_ref" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_setnet_station" CONSTRAINT "fk_y_setnet_station_y_trip" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_sled_details" CONSTRAINT "fk_y_sled_details_ref" FOREIGN KEY (trip_key)
REFERENCES y_observer_trip_master(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_sll_bait" CONSTRAINT "fk_y_sll_bait_ref" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_sll_line_set" CONSTRAINT "fk_y_sll_line_set_ref" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_sll_snoods" CONSTRAINT "fk_y_sll_snoods_ref" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_tori_line" CONSTRAINT "fk_y_tori_line_ref" FOREIGN KEY (trip_key)
REFERENCES y_observer_trip_master(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT

TABLE "y_trip_observer" CONSTRAINT "fk_y_trip_observer__trip" FOREIGN KEY (trip_number)
 REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_troll_configuration" CONSTRAINT "fk_y_troll__reference_y_observ" FOREIGN KEY (trip_number)
 REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_troll_gear" CONSTRAINT "fk_y_troll__reference_y_observ" FOREIGN KEY (trip_number)
 REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_troll_hourly" CONSTRAINT "fk_y_troll_y_observer_trip_master" FOREIGN KEY (trip_number)
 REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_troll_calibration" CONSTRAINT "fk_y_troll_y_observer_trip_master" FOREIGN KEY (trip_number)
 REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_troll_temperature" CONSTRAINT "fk_y_troll_y_temperature" FOREIGN KEY (trip_number)
 REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_trw_new_observer_proc_summary" CONSTRAINT "fk_y_trw_new_obs_proc_summary_ref" FOREIGN KEY (trip_number)
 REFERENCES y_observer_trip_master(trip_number)
TABLE "y_trw_new_observer_station" CONSTRAINT "fk_y_trw_new_observer_station_ref" FOREIGN KEY (trip_number)
 REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_trw_observer_proc_summary" CONSTRAINT "fk_y_trw_observer_proc_summary_ref" FOREIGN KEY (trip_number)
 REFERENCES y_observer_trip_master(trip_number)
TABLE "y_trw_observer_station" CONSTRAINT "fk_y_trw_observer_station_ref" FOREIGN KEY (trip_number)
 REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_vme_station" CONSTRAINT "fk_y_vme_station_trip_master" FOREIGN KEY (trip_number)
 REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_warp_scarer" CONSTRAINT "fk_y_warp_scarer_ref" FOREIGN KEY (trip_key)
 REFERENCES y_observer_trip_master(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_warp_strike" CONSTRAINT "fk_y_warp_strike_ref" FOREIGN KEY (trip_key)
 REFERENCES y_observer_trip_master(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_tori_2018_line" CONSTRAINT "fx_y_tori_2018_line_ref" FOREIGN KEY (trip_key)
 REFERENCES y_observer_trip_master(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_oto_catalog

Comment: A Catalog of the ageing material, its storage location and current ageing status.

Column	Type	Null?	Description
origin_code	character(3)	No	Code to identify the origin of the trip where the sample was taken e.g. SOP Scientific Observer Programme - Catch Sampling, Refer y_oto_origin.
origin_lookup_key	numeric(9,0)	No	System generated lookup key associated with origin code.
age_year	smallint	No	The year the fish was sampled.
trip_number	integer	No	The trip number on which the aging sample was taken. Note in the Age database, this includes character trip codes but only the SOP trips are included which includes only numeric trip numbers.
sample_number	integer	No	Sample number from which the aging sample was taken within the trip. This is the station number, eg tow or set number.
sub_sample_number	integer	No	Number of sub sample for aging. This will be subcatch number for Research trawls, cluster (box), number for SMP. SOP do not use this. -1 = Not Used.
species_area	character varying(5)	No	Area code for where the fish was caught, typically FMA code.
species	character(3)	No	Species code of the fish sampled for ageing.
fish_number	integer	No	Sequential identifying number of an individual fish for any one trip, sample, sub sample, and species.
material_code	integer	No	Code to identify material collected for ageing e.g. 1 Otolith, 2 Scales, 3 Spines, 4 Vertebrae, 5 Teeth, 6 Statolith (cephalopod).
material_lookup_key	numeric(9,0)	No	System generated lookup key associated with the material code.
room_name	character varying(50)		Room number where the ageing material can be found.
sub_location_name	character varying(50)		Location within the room, e.g. file cabinet number, draw number.
age_status_code	character varying(25)		Latest Status Code for the aging.
status_date	date		Date that the specimen achieved the latest status.

oto_catalog_key	numeric(9,0)	No	System generated key to identify the otolith catalog.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date	No	Date this age_catalog was created.

Indexes:
"pk_y_oto_catalog" PRIMARY KEY, btree (trip_number, sample_number, sub_sample_number, species, fish_number, material_code)
"ui_y_oto_catalog" UNIQUE, btree (oto_catalog_key)
Foreign-key constraints:
"fk_y_oto_catalog__material" FOREIGN KEY (material_code)
REFERENCES y_oto_material(material_code) ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_oto_catalog__origin" FOREIGN KEY (origin_code) REFERENCES y_oto_origin(origin_code)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_oto_fish

Comment: Biological information about a fish specimen for ageing.

Column	Type	Null?	Description
origin_code	character(3)	No	Code to identify the origin of the trip where the sample was taken e.g. SOP Scientific Observer Programme - Catch Sampling, Refer y_oto_origin.
age_year	smallint	No	The year the fish was sampled, fishing year for SOP samples.
trip_number	numeric(9,0)	No	The trip number on which the aging sample was taken.
sample_number	integer	No	Sample number from which the aging sample was taken within the trip. This is the station number, eg tow or set number.
sub_sample_number	integer	No	Number of sub sample for aging. This will be subcatch number for Research trawls, cluster (box), number for SMP. SOP do not use this. -1 = Not Used.
species_area	character varying(5)	No	Area code for where the fish was caught, typically FMA code.
species	character(3)	No	Species code of the fish sampled for ageing.
fish_number	integer	No	Sequential identifying number of an individual fish for any one trip, sample, sub sample, and species.
fish_length	numeric(4,1)	No	Length measurement of the fish in cm.
length_code	character(1)		Code to identify precision of length measurement, R = Rounded down to nearest cm, E = Exact to 1 decimal place.
length_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the length code.
fish_sex_code	integer		Code to Identify the sex of a fish e.g. 0=unsexed, 1=male, 2=female, 3=unknown (unable to determine).
fish_sex_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the fish sex code.
gonad_stage	character(1)		Numeric code for stage of gonad maturity.
fish_weight	numeric(8,3)		Weight (kilograms) of the fish.
otolith_weight	numeric(7,4)		Weight (grams) of an otolith.
otolith_weight2	numeric(7,4)		Weight (grams) of the second otolith.
otolith_length	numeric(4,1)		Length (mm) of an otolith.
otolith_width	numeric(3,1)		Width (mm) of an otolith.
material1_code	integer	No	Code to identify material collected for ageing e.g.

			1 Otolith 2 Scales 3 Spines 4 Vertebrae 5 Teeth 6 Statolith (cephalopod).
material1_lookup_key	numeric(9,0)	No	System generated lookup key associated with the first material code.
material2_code	integer		Code to identify a second material collected for ageing e.g. 1 Otolith 2 Scales 3 Spines 4 Vertebrae 5 Teeth 6 Statolith (cephalopod).
material2_lookup_key	numeric(9,0)	No	System generated lookup key associated with the second material code.
fish_selection_method_code	integer		Code for how the fish was selected for ageing: 1 = random, 2 = every i th fish, 3 = by size class, 4 = Extra otolith taken as chosen by the observer (from ODEAS tablet data).
fish_sel_method_lookup_key	numeric(9,0)	No	System generated lookup key associated with the fish selection method code.
fish_sampled_comment	character varying(128)		Comments about the sampled fish.
event_key	numeric(9,0)	No	System generated key to identify the event associated with the age fish event.
oto_fish_event_key	numeric(9,0)	No	System generated unique key to identify the age oto fish record.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	System generated key to identify the associated fishing event for the aging event (based on trip number and station number - sample number).
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_oto_fish" PRIMARY KEY, btree (oto_fish_event_key)
"ndx_y_oto_fish_fek" btree (fishing_event_key)
"ui_y_oto_fish" btree (trip_number, sample_number, sub_sample_number, species, fish_number)

Foreign-key constraints:
"fk_y_oto_fish__origin" FOREIGN KEY (origin_code) REFERENCES y_oto_origin(origin_code)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_oto_material

Comment: Coding structure for list of materials used for ageing; e.g., otoliths, vertebrae, scales.

Column	Type	Null?	Description
material_code	integer	No	Code to identify material being aged e.g. 1 Otolith 2 Scales 3 Spines 4 Vertebrae 5 Teeth 6 Statolith (cephalopod).
material_description	character varying(512)	No	Description of material_code, see material code for examples.
material_code_lookup_key	numeric(9,0)	No	Next key from y_next_key for lookup code key.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_oto_material" PRIMARY KEY, btree (material_code)
Referenced by:
TABLE "y_oto_catalog" CONSTRAINT "fk_y_oto_catalog__material" FOREIGN KEY (material_code)
REFERENCES y_oto_material(material_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_oto_origin

Comment: Coding structure to identify the origin of the ageing material.

Column	Type	Null?	Description
origin_code	character(3)	No	Code to identify the origin of the trip where the sample was taken, e.g. SOP Scientific Observer Programme - Catch Sampling SMP Stock Monitoring Programme - Market Sampling TAN Tangaroa KAH Kaharoa AEX Amaltal Explorer COR Cordella GIL Giljanes WIL Will Watch JCO James Cook WES Wesermunde ARR Arrow REC Recreational MIS Miscellaneous e.g., mixed landing, or no length frequency AKA Akagi Maru BFN Bluefin - MAF Auckland Vessel SHI Shinkai Maru RIG Rig catch sampling (gill-netting and trawl surveys) ELE Elephantfish catch sampling WJS W.J.Scott BUC Otago Buccaneer AKS Akebono Maru No. 3 AKE Akebono Maru No. 73.
origin_description	character varying(512)	No	Description of the origin, see origin_code for examples.
origin_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with origin code.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.

created_date date No Date this row was created.
Indexes:
"pk_y_oto_origin" PRIMARY KEY, btree (origin_code)
Referenced by:
TABLE "y_oto_catalog" CONSTRAINT "fk_y_oto_catalog__origin" FOREIGN KEY (origin_code)
REFERENCES y_oto_origin(origin_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_oto_fish" CONSTRAINT "fk_y_oto_fish__origin" FOREIGN KEY (origin_code)
REFERENCES y_oto_origin(origin_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_processed_comment

Comment: Comment for processed catch from the catch and effort logbook 2007 version.

Column	Type	Null?	Description
trip_number	integer		Trip number allocated by the observer programme.
pc_group	integer		Processed catch group number.
tow_range	character varying(12)		The number of the first and the last tow that this record applies to. P refers to Part tows, e.g. 31P.
comment	character varying(512)		
trip_key	numeric(9,0)		System generated trip key to identify the trip.
processing_event_key	numeric(9,0)	No	System generated unique identifier of the processing_event.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date		Date this row was created.

Indexes:
"pk_y_all_pc_co" PRIMARY KEY, btree (processing_event_key)
"ndx_y_pc_event_key" btree (processing_event_key)
"ndx_y_proccessed_co" btree (trip_number)

Table y_ps_activity

Comment: Details from Observer Programme Purse Seine vessel activity log.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	smallint	No	A sequential number for each recorded activity on the Vessel Activity Log of an observer PS trip.
set_number	smallint		A sequential number for each set of a purseseine trip.
start_date	date		Date recorded on the Vessel Activity Log.
end_date	date		Date from the Vessel Activity Log, if a set extending over midnight is recorded separately, then the date becomes the end_date.
trip_day	smallint		Trip days since the observer joined the vessel.
activity	character varying(4)		Code for vessel activity recorded on the Vessel Activity Log .
activity_lookup_key	numeric(9,0)	No	System generated lookup key associated with the code for the vessel activity.
start_time	time without time zone		Start time of the activity.
end_time	time without time zone		End time of the activity.
start_latitude	character varying(12)		Start set position latitude (DDMM.mm).
start_nth_sth	character(1)		Set start position latitude north or south of the equator (N or S).
start_longitude	character varying(12)		Start set position longitude (DDDMM.mm).
start_east_west	character(1)		Start set position meridian, E or W.
decimal_start_latitude	numeric(9,6)		Start position latitude in decimal degrees (format DD.dddddd).
decimal_start_longitude	numeric(9,6)		Start position longitude in decimal degrees east of Greenwich (format DDD.dddddd).
display_start_latitude	character varying(12)		Start Latitude formatted for display purposes in format DD:MM.mS, with S for South.
display_start_longitude	character varying(12)		Start Longitude formatted for display purposes in format DDD:MM.m[E|W], e.g. 172:34.5 E with E for East.
fma	character varying(5)		The FMA recorded by the observer on the Vessel Activity Log.
fma_gis	character varying(5)		The FMA calculated using GIS function, from the recorded position.
stat_area	character varying(4)		The Statistical area (derived) using GIS function, from the recorded position.
beaufort	smallint		Beaufort scale.
beaufort_lookup_key	numeric(9,0)	No	System generated lookup key associated with the beaufort scale.

school_association	character varying(2)		Code for how target school initially found. eg A9 if saw birds feeding on the target school.
school_assoc_lookup_key	numeric(9,0)	No	System generated lookup key associated with the school_association.
school_detected	character varying(2)		Code for who initially detected the target school.
school_detect_lookup_key	numeric(9,0)	No	System generated lookup key associated with the school_detected column.
target_species	character(3)		Target species recorded on the Vessel Activity Log.
aircraft_callsign	character varying(6)		Spotter aircraft call sign.
port	character varying(16)		Port where berthed.
comments	character varying(512)		Comments from Vessel Activity Log.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated event key.
created_date	date	No	Date this record was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	smallint	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
"pk_y_ps_activity" PRIMARY KEY, btree (event_key)
"ui_y_ps_activity_trip_set" UNIQUE, btree (trip_number, station_number)
"ndx_y_ps_activity_start_date" btree (start_date)
"ndx_y_ps_activity_trip_key" btree (trip_key)
Foreign-key constraints:
"fk_y_ps_activity_target_species" FOREIGN KEY (target_species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_ps_activity_y_trip" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_ps_catch

Comment: Green_weights from the Purse Seine Catch Effort Form.

Column	Type	Null?	Description
catch_key	integer	No	Unique number to identify the catch records.
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	System generated sequential station number for each activity of a ps trip.
set_number	integer	No	The set number for a purseseine trip.
species	character(3)	No	Species code.
processed_state	character(3)		End destination of the catch: GRE = Green (whole). DIS = Discarded dead. EAT = Taken to galley. RET = Retained by observer. FIN = Fins (sharks).
state_lookup	numeric(9,0)		System generated unique key associated with the state (end_type).
hold_number	character varying(5)		Hold number the catch is stored in.
greenweight	numeric(11,3)		Green weight of the species.
tag_part1	character varying(2)		Weight method tag part 1, device of greenweight method.
tag_part1_lookup	numeric(9,0)		System generated unique look-up key associated with the method_analysis.
tag_part2	character(1)		Weight method tag part 2, location where fish observed
tag_part2_lookup	numeric(9,0)		System generated unique look-up key associated with the tag part 2 (location of analysis).
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated unique key to identify the event.
fishing_event_key	numeric(9,0)	No	System generated unique key to identify a fishing event.
created_date	date	No	Date this event was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
"pk_y_ps_catch" PRIMARY KEY, btree (catch_key)

"ndx_y_ps_catch_trpkey" btree (trip_key)
Foreign-key constraints:
"fk_y_ps_catch_ref" FOREIGN KEY (fishing_event_key) REFERENCES y_ps_set(fishing_event_key)
ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_ps_catch_species" FOREIGN KEY (species) REFERENCES x_species_codes(species_code)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_ps_set

Comment: Effort details from Observer Programme Purse Seine Catch Effort form.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	A sequential number for each station of an observer trip.
set_number	integer	No	A sequential number for each set of a purse seine trip.
sea_temperature	numeric(3,1)		Sea surface temperature, degrees Celsius.
seabed_depth	integer		Depth (metres) to the seabed at the start of the set.
start_set	time without time zone		Start of set, (time skiff off).
start_set_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
begin_purse	time without time zone		Time begin pursing (winch on).
begin_purse_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
end_purse	time without time zone		Time end pursing (rings up).
end_purse_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
net_rolling	time without time zone		Time net rolling started.
net_rolling_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
net_sacking	time without time zone		Time net sacking began.
net_sacking_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
begin_brail	time without time zone		Time begin brailing.
begin_brail_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
end_brail	time without time zone		Time end brailing.
end_brail_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
end_set	time without time zone		End of set, (time skiff on board).
end_set_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
total_gw_surface	integer		Total greenweight at surface kg.
total_gw_surface_method	character(3)		Total greenweight at surface assessment method.
gw_surface_part1_lookup_key	numeric(9,0)		System generated lookup key associated with the total_surface_greenweight method First part: the extent of catch data for the tow/set (Purse Seine).
gw_surface_part2_lookup_key	numeric(9,0)		System generated lookup key associated with the total_surface_greenweight method

		Second part: how weight was derived (Purse Seine).
gw_surface_part3_lookup_key	numeric(9,0)	System generated lookup key associated with the total_surface_greenweight method Third part: the reliability of 2nd part (Purse Seine).
total_gw_onboard	integer	Total greenweight onboard kg.
total_gw_onboard_method	character(3)	Total greenweight onboard assessment method.
gw_onboard_part1_lookup_key	numeric(9,0)	System generated lookup key associated with the total_onboard_greenweight method First part: the extent of catch data for the tow/set (Purse Seine).
gw_onboard_part2_lookup_key	numeric(9,0)	System generated lookup key associated with the total_onboard_greenweight method Second part: how weight was derived (Purse Seine).
gw_onboard_part3_lookup_key	numeric(9,0)	System generated lookup key associated with the total_onboard_greenweight method Third part: the reliability of 2nd part (Purse Seine).
result_code	character(1)	Result of set code, e.g. 1 = Entire school caught, 2 = Some caught / some lost, 3 = Entire school lost, etc.
result_code_lookup_key	numeric(9,0)	System generated lookup key associated with the result code.
brail_code	character(1)	Brail type code, P = suction pump, S = scoop, O = other.
brail_code_lookup_key	numeric(9,0)	System generated lookup key associated with the brail code.
total_losses	integer	Amount of loss of any (potential) catch during setting, kg.
loss_method	character(3)	Method code for determining amount of total losses.
loss_method_part1_lookup_key	numeric(9,0)	System generated lookup key associated with part 1 of the loss method.
loss_method_part2_lookup_key	numeric(9,0)	System generated lookup key associated with part 2 of the loss method.
loss_method_part3_lookup_key	numeric(9,0)	System generated lookup key associated with part 3 of the loss method.
loss_code	character(1)	Loss code that describes how the catch loss occurred.
loss_stage	character(2)	Event stage code indicating the stage of the fishing event when the catch loss occurred, e.g. SS = Start of Set, DP = During Pursing, etc.
loss_time	time without time zone	Time (NZST) that the primary catch loss occurred.
loss_time_code	character(1)	Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
mdbd_yn	character(1)	Sampling MDBD this set, Y/N.
lf_yn	character(1)	Sampling LF this set, Y/N.
birds_obs	character(1)	If bird observations were undertaken for this set, Y/N.

nfb_yn	character(1)		Sampling NFB this set, Y/N.
mammal	smallint		Number of marine mammals captured in the tow.
seabird	smallint		Number of seabirds captured in the tow.
turtle	smallint		Number of turtles captured.
celr_no	character varying(16)		CELR number for this set.
comment_ce	character varying(380)		Comments from Catch Effort form
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated event key.
fishing_event_key	numeric(9,0)	No	System generated key of the fishing event.
created_date	date	No	Date this record was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_y_ps_set" PRIMARY KEY, btree (fishing_event_key)
  "ui_y_ps_set" UNIQUE, btree (trip_number, station_number)
Foreign-key constraints:
  "fk_y_ps_set_y_trip" FOREIGN KEY (trip_number)
   REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
  TABLE "y_ps_catch" CONSTRAINT "fk_y_ps_catch_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES y_ps_set(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_ref_observer

Comment: The list of Observers who may or have undertaken SOP trips.

Column	Type	Null?	Description
observer_key	numeric(9,0)	No	System generated key to identify the observer.
observer_name	character varying(50)	No	Full Name of the observer in <Last Name>, <First Name> format.
observer_status	character(3)	No	Status of the observer (to filter for entry of new trips), Values: CUR = Current, OBS = Obsolete.
start_date	date	No	Start Date from which this observer may be used.
end_date	date		End Date (if known) to which this observer may be used.
last_name	character varying(50)	No	Last name of the Observer.
first_name	character varying(50)	No	First name of the Observer, or first initial.
observer_code	character(4)		Unique observer code. The first initial followed by the first 3 letters of observers surname, unless this is not unique.
created_date	date	No	Date this record was created.

Indexes:
  "pk_y_ref_observer" PRIMARY KEY, btree (observer_key)
  "ui_y_ref_observer" UNIQUE, btree (observer_code)
Referenced by:
  TABLE "y_trip_observer" CONSTRAINT "fk_y_trip_observer__obs" FOREIGN KEY (observer_key)
   REFERENCES y_ref_observer(observer_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_setnet_catch

Comment: Green_weights from the Setnet Catch Effort Form.

Column	Type	Null?	Description
setnet_catch_key	integer	No	Unique number to identify the catch records.
trip_number	integer		Trip number allocated by the observer programme.
set_number	integer		Sequential set number for a setnet trip.
species	character(3)		Species code.
end_type	character(3)		End destination of the material: ACC = Accidentally lost ALI = Discarded alive (likely to survive) DIS = Discarded dead MEA = Used for meal EAT = Taken to galley RET = Retained by observer RDI = Sample retained by observer, remainder discarded PRO =Processed by vessel.
end_type_lookup	numeric(9,0)		System generated unique key associated with the end_type.
greenweight	integer		Green weight of the species.
location_analysis	character(1)		Weight method, location where fish observed
location_analysis_lookup	numeric(9,0)		System generated unique key associated with the location_analysis.
method_analysis	smallint		The method of analysis of greenweight.
method_analysis_lookup	numeric(9,0)		System generated unique key associated with the method_analysis.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated unique key to identify the event.
fishing_event_key	numeric(9,0)	No	System generated unique key to identify a fishing event.
created_date	date	No	Date this event was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:

"pk_y_setnet_catch" PRIMARY KEY, btree (setnet_catch_key)

"ndx_y_setnet_catch_trpkey" btree (trip_key)
Foreign-key constraints:
"fk_y_setnet_catch_ref" FOREIGN KEY (fishing_event_key)
REFERENCES y_setnet_station(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_setnet_catch_species" FOREIGN KEY (species) REFERENCES x_species_codes(species_code)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_setnet_gear

Comment: Set net gear details for a setnet trip.

Column	Type	Null?	Description
setnet_gear_key	numeric(9,0)	No	System generated key to identify each unique net on a setnet trip.
trip_number	integer	No	Trip number allocated by the observer programme.
obs1	character(4)		Observer code, usually the first initial followed by the first three letters of observers surname.
net_id	character varying(5)		Setnet code for the setnet gear detailed.
net_height	numeric(5,2)		The height from foot rope to topline (m to 1 decimal).
net_mesh_size	smallint		Nominal net mesh size of net (mm).
float_size	smallint		Average float_size (mm).
max_float_spacing	numeric(5,2)		The maximum distance between floats (m to 1 decimal).
ground_weight	integer		Nominal average of ground weights. (gm)
max_weight_spacing	numeric(5,2)		The maximum distance between weights on ground rope (m).
max_pinger_spacing	numeric(5,2)		The maximum spacing between pingers (m). -1 = pingers used, spacing not recorded
net_length	integer		Length of the net (m), from form Version 2.
comments	character varying(512)		Any comments for the described setnet gear.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date when this row was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_y_setnet_gear" PRIMARY KEY, btree (setnet_gear_key)
  "ui_y_setnet_gear" UNIQUE, btree (trip_number, net_id)
  "ndx_y_setnet_gear_trip_key" btree (trip_key)
Foreign-key constraints:
  "fk_y_setnet_gear_ref" FOREIGN KEY (trip_number)
   REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_setnet_nets_set

Comment: Set net gear used for a set.

Column	Type	Null?	Description
nets_set_key	integer	No	Unique number for each net set of a setnet Catch Effort record.
trip_number	integer	No	Trip number allocated by the observer programme.
set_number	integer	No	Sequential set number.
net_id	character varying(4)		Setnet code for the setnet detailed.
net_length	integer		The length of net used for the net ID (m). Used for v1 of the form only. Refer to y_setnet_gear for net_length from later form versions.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated unique key to identify the event.
fishing_event_key	numeric(9,0)	No	System generated unique key to identify a fishing event.
created_date	date	No	Date when this row was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_y_setnet_nets_set" PRIMARY KEY, btree (nets_set_key)
  "ui_y_setnet_nets_set" UNIQUE, btree (trip_number, set_number, net_id)
  "ndx_setnet_nets_set_trip" btree (trip_number)
Foreign-key constraints:
  "fk_y_setnet_nets_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES y_setnet_station(fishing_event_key)

Table y_setnet_station

Comment: Setnet effort data from the Observer Setnet Catch/Effort Form.

Column	Type	Null?	Description
fishing_event_key	numeric(9,0)	No	System generated unique key to identify a fishing event.
trip_number	integer	No	Trip number allocated by the observer programme.
set_number	integer	No	Sequential identifier for each set.
target_species	character(3)		Species Code for the species being targeted.
set_observed	character(1)		Observer did observe this setting. Y or N.
start_set_date	date		Date at start of set.
start_set_time	time without time zone		Time at start of set (24 hour format, NZST).
start_set_latitude	character varying(12)		Start set position latitude (DDMM.mm).
start_set_nth_sth	character(1)		Set start position latitude north or south of the equator (N or S).
start_set_longitude	character varying(12)		Start set position longitude (DDDMM.mm).
start_set_east_west	character(1)		Start set position meridian, E or W.
start_set_bottom_depth	integer		Depth to seabed under vessel at the start of set in metres.
net_set_on_bottom	character(1)		Captain intended to set net on the bottom Y N or U.
net_set_clean	character(1)		The net was set clean of fish Y N or O.
set_offal_discharge	character(1)		Code for offal discharge during seting: D = Offal was discharged M = Offal was minced and then discharged H = Offal was held and not discharged N = No offal was produced U = Not observed.
set_offal_lookup_key	numeric(9,0)		System generated lookup key associated with the any offal discharged during the time of setting.
set_fish_discharge	character(1)		Code for whole fish discharge during seting: D = Whole fish were discharged from the factory M = Whole fish were minced and then discharged H = Whole fish were held and not discharged N = No whole fish discards were produced U = Not observed.

set_discharge_lookup_key	numeric(9,0)	System generated lookup key associated with any whole fish discards produced during the time of hauling.
set_interrupt_time	integer	Duration setting net was interrupted in minutes.
set_beaufort	character(2)	The number on the Beaufort scale that best represents the sea state, (0 - 12) during setting.
set_beaufort_lookup_key	numeric(9,0)	System generated look up key associated with the haul beaufort scale.
end_set_time	time without time zone	Time at end of set (24 hour format, NZST).
end_set_latitude	character varying(12)	End set position latitude (DDMM.mm).
end_set_nth_sth	character(1)	Set end position latitude north or south of the equator (N or S).
end_set_longitude	character varying(12)	End set position longitude (DDDMM.mm).
end_set_east_west	character(1)	End set position meridian, E or W.
end_set_bottom_depth	integer	Depth to seabed under vessel at the end of set in metres.
haul_observed	character(1)	Observer did observe this hauling. Y or N.
start_haul_date	date	Date at start of haul.
start_haul_time	time without time zone	Start time of haul (24 hour format, NZST).
end_hauled_first	character(1)	Direction net hauled, if backwards Y N or O.
end_hauled_lookup_key	numeric(9,0)	System generated lookup key associated with the direction net hauled.
haul_beaufort	character(2)	The number on the Beaufort scale that best represents the sea state, (0 - 12) at start of hauling.
haul_beaufort_lookup_key	numeric(9,0)	
end_haul_time	time without time zone	End time of haul (24 hour format, NZST).
haul_offal_discharge	character(1)	Code for offal discharge during hauling: D = Offal was discharged M = Offal was minced and then discharged H = Offal was held and not discharged N = No offal was produced U = Not observed.
haul_offal_lookup_key	numeric(9,0)	System generated lookup key associated with the any offal discharged during the time of setting.
haul_fish_discharge	character(1)	Code for whole fish discharge during hauling: D = Whole fish were discharged from the factory M = Whole fish were minced and then discharged H = Whole fish were held and not discharged

		N = No whole fish discards were produced U = Not observed.
haul_discharge_lookup_key	numeric(9,0)	System generated lookup key associated with any whole fish discards produced during the time of hauling.
haul_interrupt_time	integer	Duration hauling net was interrupted in minutes.
nonfish_bycatch	character(1)	Code to show whether any non-fish bycatch (seabird, marine mammal, marine reptile) occurred. Y = Yes, N = No, U = Not observed.
benthic_materials	character(1)	Code to show whether any benthic materials came up in the set. Y = Yes, N = No, U = Not observed.
total_spacer	integer	The total length of all the spacer sections contained within this set (m).
bio_samples	smallint	The number of species with biological samples taken.
comments	character varying(512)	Comments for setnet Catch Effort.
set_date_time	timestamp without time zone	Set start date and time stored as a timestamp without time zone.
haul_date_time	timestamp without time zone	Haul start date and time stored as a timestamp without time zone.
start_latitude	numeric(9,6)	Start position latitude in decimal degrees (format DD.dddddd).
start_longitude	numeric(9,6)	Start position longitude in decimal degrees east of Greenwich (format DDD.dddddd).
end_latitude	numeric(9,6)	End position latitude in decimal degrees (format DD.dddddd).
end_longitude	numeric(9,6)	End position longitude in decimal degrees east of Greenwich (format DDD.dddddd).
trunc_start_latitude	numeric(3,1)	Start position latitude in decimal degrees truncated to 1/10th of a degree (format DD.d).
trunc_start_longitude	numeric(4,1)	Start position longitude in decimal degrees east of Greenwich truncated to 1/10th of a degree (format DDD.d).
trunc_end_latitude	numeric(3,1)	End position latitude in decimal degrees truncated to 1/10th of a degree (format DD.d).
trunc_end_longitude	numeric(4,1)	End position longitude in decimal degrees east of Greenwich truncated to 1/10th of a degree (format DDD.d).
display_start_latitude	character varying(12)	Start Latitude formatted for display purposes in format DD:MM.mS, with S for South.
display_start_longitude	character varying(12)	Start Longitude formatted for display purposes in format DDD:MM.m[E|W], e.g. 172:34.5E with E for East.

display_end_latitude	character varying(12)		End Latitude formatted for display purposes in format DD:MM.mS, with S for South.
display_end_longitude	character varying(12)		End Longitude formatted for display purposes in format DDD:MM.m[E|W], e.g. 172:34.5E with E for East.
start_obs_fma	character varying(5)		The (derived) fma area code associated with the Start Latitude and Longitude.
end_obs_fma	character varying(5)		The (derived) fma area code associated with the End Latitude and Longitude.
start_stats_area	character varying(4)		The (derived) stats area code associated with the Start Latitude and Longitude.
end_stats_area	character varying(4)		The (derived) stats area code associated with the End Latitude and Longitude.
fishing_year	character(7)		Fishing year in YYYY/YY format.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated unique key to identify the event.
vessel_key	numeric(9,0)	No	The Ministry of Fisheries allocated key for the vessel.
event_type_key	numeric(9,0)	No	System generated key to identify the types of event e.g., Age Event, Fishing Event.
created_date	date	No	Date this event was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		No Comma separated short error texts for errors for the row.
the_geom	geometry		

Indexes:
  "pk_y_setnet_station" PRIMARY KEY, btree (fishing_event_key)
  "ui_y_setnet_station_trip_set" UNIQUE, btree (trip_number, set_number)
  "ndx_y_setnet_station_start_date" btree (start_set_date)
  "ndx_y_setnet_station_trip_key" btree (trip_key)
Check constraints:
  "enforce_dims_the_geom" CHECK (ndims(the_geom) = 2)
  "enforce_geotype_the_geom" CHECK (geometrytype(the_geom) = 'LINESTRING'::text OR the_geom IS NULL)
  "enforce_srid_the_geom" CHECK (srid(the_geom) = 4326)
Foreign-key constraints:
  "fk_y_setnet_station_target_species" FOREIGN KEY (target_species)
   REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_y_setnet_station_y_trip" FOREIGN KEY (trip_number)
   REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Referenced by:
TABLE "y_setnet_catch" CONSTRAINT "fk_y_setnet_catch_ref" FOREIGN KEY (fishing_event_key)
REFERENCES y_setnet_station(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_setnet_nets_set" CONSTRAINT "fk_y_setnet_nets_ref" FOREIGN KEY (fishing_event_key)
REFERENCES y_setnet_station(fishing_event_key)

Table y_sled_details

Comment: Details of the Sea Lion Exclusion Device (SLED).

Column	Type	Null?	Description
sled_key	bigint	No	System generated key to identify the sled.
trip_number	integer	No	Trip number allocated by the observer programme.
obs1	character(5)		First initial followed by the first three letters of observers surname involved in the measurement of the SLED.
obs2	character(5)		As for obs1.
equipment_code	character varying(3)		Equipment code consisting of the letter S plus a number. Each SLED measured during the trip is numbered from 1 onwards.
measure_type	character varying(3)		Full to indicate that this is a full record of measurements. If changes then Partial and an Equipment code (eg S1) of the SLED that has been altered entered.
measure_type_lookup_key	numeric(9,0)		System generated lookup key associated with the measure type.
based_on	character varying(2)		Where a Partial measurement the Equipment Code (eg S1) of the device that has been altered.
measure_date	date		Date that the measurements were made.
measure_reason	character(1)		Code to explain reason this measurement was taken: I = Initial measurement D = description of the device in a Damaged state R = measurement of the device after it has been Repaired O = some Other reason for this measurement.
reason_lookup_key	numeric(9,0)		System generated lookup key associated with the measure reason.
grid_id	character varying(12)		Unique grid ID number of this SLED.
grid_type	character(1)		Type of grid used, e.g. 2 section, 3 section or Other.
grid_type_lookup_key	numeric(9,0)		System generated lookup key associated with grid type.
grid_shape	character(1)		Shape of the grid used, e.g. Oval, Oblong or Square.
grid_shape_lookup_key	numeric(9,0)		System generated lookup key associated with the grid shape.
grid_max_width	integer		Width of the grid at its widest point (including the width (mm) of the outer frame).
frame_min_dia	integer		Diameter of the steel bar that the frame of the grid is made in millimetres.

bar_min_dia	integer	Diameter of the steel bar that the bars of the grid are made of in millimetres.
section1_max_height	integer	Height (at its maximum point) of Section 1 excluding the thickness of the outer frame.
section2_max_height	integer	Height (at its maximum point) of Section 2 excluding the thickness of the outer frame.
section3_max_height	integer	Height (at its maximum point) of Section 3 excluding the thickness of the outer frame.
escape_hatch_width	integer	Width of the escape hatch at the base of the triangle (in millimetres).
escape_hatch_length	integer	Length of the escape hatch from the centre of the base to the apex (in millimetres)
hood_width	integer	Width of the hood (the distance between the leading corners of the hood, recorded in millimetres).
hood_height	integer	Height of the hood (the vertical distance to the top of the hood when it is fully extended, recorded in millimetres).
hood_length	integer	Length of the hood (the distance along the hood from the top of the hood to the back of the hood, recorded in millimetres).
hood_mesh	integer	Mesh size of the hood (in millimetres). From corner to corner along the diagonal of the mesh with the mesh stretched.
hood_edge_rope	integer	Length of Leading Edge of the hood (around the curve, in millimetres).
hood_floats	integer	A count of floats attached to the kite.
lengthener_mesh	integer	Mesh size of the lengthener (mm).
lengthener_type	character(1)	Whether the net in the lengthener is a 2 seam or a 4 seam net.
lengthener_type_lookup_key	numeric(9,0)	System generated lookup key associated with the lengthener_type.
kite_length	integer	Length of kite in mm.
kite_width	integer	Width of kite in mm.
kite_stitch	character(1)	Whether the stitching between the Kite and Leading Edge of the hood is continuous (no gaps).
sled_comments	character varying(600)	Comments from the SLED Details Form.
trip_key	numeric(9,0)	System generated trip key to identify the trip.
error_highest_level	smallint	The highest error level associated with the error messages for the row.
error_count	integer	The number of error messages for the row.
error_text	character varying(512)	Comma separated short error texts for errors for the row.
created_date	date	Date this row was created.

Indexes:
"pk_y_sled_details" PRIMARY KEY, btree (sled_key)
"ndx_y_sled_trip" btree (trip_number)
"ndx_y_sled_tripkey" btree (trip_key)
Foreign-key constraints:
"fk_y_sled_details_ref" FOREIGN KEY (trip_key) REFERENCES y_observer_trip_master(trip_key)
ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "y_sled_grid" CONSTRAINT "fk_y_sled_grid_ref" FOREIGN KEY (sled_key)
REFERENCES y_sled_details(sled_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sled_grid

Comment: SLED grid bar spacings.

Column	Type	Null?	Description
sled_grid_key	bigint	No	System generated key to identify the sled grid.
sled_key	bigint	No	System generated key to identify the sled.
trip_number	integer	No	Trip number allocated by the observer programme.
equipment_code	character varying(3)		Equipment code consisting of the letter S plus a number. Each SLED measured during the trip is numbered from 1 onwards.
section	smallint	No	Section number.
space_number	integer		Grid bar spacing number.
space_mm	integer		Grid bar spacing (mm) as the spaces between the bars.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date this row was created.

Indexes:
  "pk_y_sled_grid" PRIMARY KEY, btree (sled_grid_key)
  "ndx_y_sled_grid_key" btree (sled_key)
  "ndx_y_sled_grid_trip" btree (trip_number)
Foreign-key constraints:
  "fk_y_sled_grid_ref" FOREIGN KEY (sled_key) REFERENCES y_sled_details(sled_key)
   ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sll_2015_stomach

Comment: Stomach sample data from fish caught on Surface Long Line vessels, 2015 version.

Column	Type	Null?	Description
specimen_id_number	integer	No	Unique identification number assigned to each specimen recorded on the SLL Deck Log.
trip_number	integer	No	Unique identification number assigned to each specimen recorded on the SLL Deck Log.
set_number	integer	No	Observed set to which following data applies.
sample_number	integer	No	Number assigned by observer to samples taken.
species	character(3)		Species code of deck log specimen with stomach sampled.
fullness	character(1)		Stomach fullness of sampled specimen: 0=Empty, 1=Trace, 2=Part full(One quarter-three quarters full), 3=Full, 4=Everted.
fullness_lookup_key	numeric(9,0)	No	System generated lookup key associated with sample stomach fullness.
prey1_species	character(3)		Species code for identified prey species 1.
prey1_condition	smallint		Code to record prey 1 condition: 1=Fresh, 2=Part digested, 3=Heavily digested.
prey1_cond_lookup_key	numeric(9,0)	No	System generated lookup key associated with prey condition.
prey1_volume	smallint		Volume of prey 1 species as a percentage of total stomach contents.
prey2_species	character(3)		Species code for identified prey species 2.
prey2_condition	smallint		Code to record prey 2 condition: 1=Fresh, 2=Part digested, 3=Heavily digested.
prey2_cond_lookup_key	numeric(9,0)	No	System generated lookup key associated with prey condition.
prey2_volume	smallint		Volume of prey 2 species as a percentage of total stomach contents.
prey3_species	character(3)		Species code for identified prey species 3.
prey3_condition	smallint		Code to record prey 3 condition: 1=Fresh, 2=Part digested, 3=Heavily digested.
prey3_cond_lookup_key	numeric(9,0)	No	System generated lookup key associated with prey condition.
prey3_volume	smallint		Volume of prey 3 species as a percentage of total stomach contents.
prey4_species	character(3)		Species code for identified prey species 4.
prey4_condition	smallint		Code to record prey 4 condition: 1=Fresh, 2=Part digested, 3=Heavily digested.

prey4_cond_lookup_key	numeric(9,0)	No	System generated lookup key associated with prey condition.
prey4_volume	smallint		Volume of prey 4 species as a percentage of total stomach contents.
comments	character varying(512)		Observer comments associated with this stomach form record.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	Fishing event key derived from the trip number and set number.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
  "pk_y_sll_2015_stomach" PRIMARY KEY, btree (specimen_id_number)
Check constraints:
  "y_sll_2015_stom_prey1_volume" CHECK (prey1_volume >= 0 AND prey1_volume <= 100)
  "y_sll_2015_stom_prey2_volume" CHECK (prey2_volume >= 0 AND prey2_volume <= 100)
  "y_sll_2015_stom_prey3_volume" CHECK (prey3_volume >= 0 AND prey3_volume <= 100)
  "y_sll_2015_stom_prey4_volume" CHECK (prey4_volume >= 0 AND prey4_volume <= 100)
Foreign-key constraints:
  "fk_y_sll_2015_stomach_ref" FOREIGN KEY (specimen_id_number)
   REFERENCES y_sll_catch_specimen(specimen_id_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sll_2018_baskets

Comment: Surface long line gear, detail on baskets deployed for fishing events. From SLL gear form Version 3, August 2018.

Column	Type	Null?	Description
basket_key	numeric(9,0)	No	System generated unique key for baskets deployed on SLL gear. Generated from trip_key and sequential integer.
trip_number	integer	No	Trip number allocated by the observer programme.
gear_code	character varying(3)	No	Code used as unique identifier for a single Longline configuration.
basket_number	smallint		Identifier for basket number deployed on longline configuration.
number_snoods	smallint		Number of snoods in the basket.
snood_length	smallint		Length of snoods (m).
hook_type	character varying(512)		Hook type and size, as referred to by retailers.
number_money_makers	smallint		Number of money-makers in the basket.
money_maker_diameter	smallint		Money-maker diameter (cm).
number_weighted_snoods	smallint		Number of weighted snoods deployed.
weighting_type	character(2)		Weighting type:\r H = Hook pods,\r S = Sliding weight,\r W = Weighted swivel,\r F = Fixed weights,\r C = shark Clip,\r O = Other (described in comments).
distance_weight_to_hook	integer		Distance between the hook and the closest weight (cm).
weight	integer		Mass of the weight closest to hook (g).
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
sll_gear_key	numeric(9,0)	No	System generated unique key for SLL gear. Generated from trip_key and gear_code numeric identifier.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:

    "pk_y_sll_2018_baskets" PRIMARY KEY, btree (basket_key)
Foreign-key constraints:
    "fk_y_sll_2018_baskets_gear" FOREIGN KEY (sll_gear_key)
     REFERENCES y_sll_2018_gear(sll_gear_key)

Table y_sll_2018_gear

Comment: Surface long line gear data. From SLL gear form Version 3, August 2018.

Column	Type	Null?	Description
sll_gear_key	numeric(9,0)	No	System generated unique key for SLL gear. Generated from trip_key and gear_code numeric identifier.
trip_number	integer	No	Trip number allocated by the observer programme.
observer_code	character(4)		Observer code, typically first name initial followed by the first three letters of observers surname.
gear_code	character varying(3)	No	Code used as unique identifier for a single Longline configuration.
mainline_material	character varying		Material used in mainline construction.
mainline_diameter	numeric(3,1)		Diameter of the mainline/backbone (mm).
float_line_length	smallint		Length of the float/drop line (m).
float_line_diameter	smallint		Diameter of the float/drop line (mm).
surface_float_diameter	smallint		Diameter of the surface floats (cm)
comments	character varying		Observer comment on longline gear configuration.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
  "pk_y_sll_2018_gear" PRIMARY KEY, btree (sll_gear_key)
  "ui_y_sll_2018_gear" UNIQUE CONSTRAINT, btree (trip_number, gear_code)
Referenced by:
  TABLE "y_sll_2018_baskets" CONSTRAINT "fk_y_sll_2018_baskets_gear" FOREIGN KEY (sll_gear_key)
   REFERENCES y_sll_2018_gear(sll_gear_key)

Table y_sll_2018_haul

Comment: Effort data on line hauling activities of tuna longlines. From SLL Haul log, version 3, August 2018.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
observer_code	character(4)		Observer code, typically first name initial followed by the first three letters of observers surname.
set_number	smallint	No	Number assigned by observers to a distinct observed set.
fma_code	character(4)		Fisheries Management Area that the position at start of hauling occurs within.
end_hauled_first	character(1)		Which end of line hauled first: 1 = End set first, 2 = End set last.
start_recd_by_obs	character(1)		Whether hauling start details were recorded by: Y = observer, or N = vessel.
start_date	date		Start date of hauling.
start_time	time without time zone		Start time of hauling.
start_depth	integer		Seabed depth at start of hauling (m).
start_latitude	numeric(5,1)		Latitude at start of hauling (DDMM.m format).
start_north_south	character(1)		Northern or Southern Hemisphere for start latitude.
start_longitude	numeric(6,1)		Longitude at start of hauling (DDDMM.m format).
start_east_west	character(1)		Eastern or Western hemisphere for start longitude.
end_recd_by_obs	character(1)		Whether hauling end details were recorded by: Y = observer, or N = vessel.
end_date	date		End date of hauling.
end_time	time without time zone		End time of hauling.
end_depth	integer		Seabed depth at end of hauling (m).
end_latitude	numeric(5,1)		Latitude at end of hauling (DDMM.m format).
end_north_south	character(1)		Northern or Southern Hemisphere for end latitude.
end_longitude	numeric(6,1)		Longitude at end of hauling (DDMM.m format).
end_east_west	character(1)		Eastern or Western hemisphere for end longitude.
mid_cloud_cover	smallint		Cloud cover percentage at mid-point of hauling.
mid_wind_direction	smallint		Wind direction (0-359 degrees) at mid-point of hauling.
mid_beaufort	smallint		Beaufort scale that represents the sea state at mid-point of hauling.
mid_beaufort_lookup_key	numeric(9,0)	No	System generated lookup key for Beaufort scale value.
mid_vessel_speed	numeric(3,1)		Vessel speed (knots) at mid-point of hauling.
obs_1_start_time	time without time zone		Start time of observation period 1.

obs_1_end_time	time without time zone	End time of observation period 1.
obs_1_hooks_hauled	integer	Number of hooks observed hauled in period 1.
obs_2_start_time	time without time zone	Start time of observation period 2.
obs_2_end_time	time without time zone	End time of observation period 2.
obs_2_hooks_hauled	integer	Number of hooks observed hauled in period 2.
obs_3_start_time	time without time zone	Start time of observation period 3.
obs_3_end_time	time without time zone	End time of observation period 3.
obs_3_hooks_hauled	integer	Number of hooks observed hauled in period 3.
obs_4_start_time	time without time zone	Start time of observation period 4.
obs_4_end_time	time without time zone	End time of observation period 4.
obs_4_hooks_hauled	integer	Number of hooks observed hauled in period 4.
obs_5_start_time	time without time zone	Start time of observation period 5.
obs_5_end_time	time without time zone	End time of observation period 5.
obs_5_hooks_hauled	integer	Number of hooks observed hauled in period 5.
obs_6_start_time	time without time zone	Start time of observation period 6.
obs_6_end_time	time without time zone	End time of observation period 6.
obs_6_hooks_hauled	integer	Number of hooks observed hauled in period 6.
port_offal_discard	character(1)	Code for offal discarding on port side: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
port_bait_discard	character(1)	Code for bait discarding on port side: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
port_whole_fish_discard	character(1)	Code for whole fish discarding on port side: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full,

		R = Retained and discarded once setting complete, N = No discarding.
stbd_offal_discard	character(1)	Code for offal discarding on starboard side: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
stbd_bait_discard	character(1)	Code for bait discarding on starboard side: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
stbd_whole_fish_discard	character(1)	Code for whole fish discarding on starboard side: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
stern_offal_discard	character(1)	Code for offal discarding aft over stern: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
stern_bait_discard	character(1)	Code for bait discarding aft over stern: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
stern_whole_fish_discard	character(1)	Code for whole fish discarding aft over stern:

			C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
water_cannon_yn	character(1)		Whether water cannons were used as a mitigation strategy for protected species captures (Y/N)
acoustic_bird_deterrent_yn	character(1)		Whether acoustic bird deterrents were used as a mitigation strategy for protected species captures (Y/N).
brickle_curtain_yn	character(1)		Whether a brickle curtain was deployed while hauling (Y/N).
other_mitigation_yn	character(1)		Whether any other mitigation devices were used during the haul (Y/N). Detailed in observer comments.
fishing_gear_discard_yn	character(1)		Whether fishing gear was discarded (Y/N).
entire_haul_observed_yn	character(1)		Whether the entire haul was observed (Y/N).
number_hooks_lost	integer		Number of hooks lost, excluding those deliberately cut off.
comments	character varying		Observer comments on line hauling event.
haul_start_datetime	timestamp without time zone		Start date time of the hauling event.
decimal_start_latitude	numeric(8,6)		Start position latitude in decimal degrees (format DD.dddddd).
decimal_start_longitude	numeric(9,6)		Start position longitude in decimal degrees east of Greenwich (format DDD.dddddd)
start_display_latitude	character(9)		Start Latitude formatted for display purposes in format DD:MM.mS.
start_display_longitude	character(10)		Start Longitude formatted for display purposes in format DDD:MM.m[E|W], e.g. 172:34.5E with E for East.
haul_end_datetime	timestamp without time zone		End date time of the hauling event.
decimal_end_latitude	numeric(8,6)		End position latitude in decimal degrees (format DD.dddddd).
decimal_end_longitude	numeric(9,6)		End position longitude in decimal degrees east of Greenwich (format DDD.dddddd).
end_display_latitude	character(9)		End Latitude formatted for display purposes in format DD:MM.mS.
end_display_longitude	character(10)		End Longitude formatted for display purposes in format DDD:MM.m[E|W], e.g. 172:34.5E with E for East.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	Fishing event key derived from the trip key and set number.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.

error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_sll_2018_haul" PRIMARY KEY, btree (trip_number, set_number)
"ui_y_sll_2018_haul" UNIQUE CONSTRAINT, btree (fishing_event_key)
Foreign-key constraints:
"fk_y_sll_2018_haul_ref" FOREIGN KEY (trip_number, set_number)
REFERENCES y_sll_2018_set(trip_number, set_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sll_2018_set

Comment: Effort data on line setting activities of tuna longlines. From SLL Longline Set log, version 3, August 2018.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
observer_code	character(4)		Observer code, typically first name initial followed by the first three letters of observers surname.
set_number	smallint	No	Number assigned by observers to a distinct observed set.
target_species	character(3)		Nominal vessel target species for this setting event.
fma_code	character(4)		Fisheries Management Area that the position at start of setting occurs within.
start_rec_by_obs	character(1)		Whether setting start details were recorded by: Y = observer, or N = vessel.
start_date	date		Start date of setting.
start_time	time without time zone		Start time of setting.
start_depth	integer		Seabed depth at start of setting (m).
start_latitude	numeric(5,1)		Latitude at start of setting (DDMM.m format).
start_north_south	character(1)		Northern or Southern Hemisphere for start latitude.
start_longitude	numeric(6,1)		Longitude at start of setting (DDDMM.m format).
start_east_west	character(1)		Eastern or Western hemisphere for start longitude.
end_rec_by_obs	character(1)		Whether setting end details were recorded by: Y = observer, or N = vessel.
end_date	date		End date of setting.
end_time	time without time zone		End time of setting.
end_depth	integer		Seabed depth at end of setting.
end_latitude	numeric(5,1)		Latitude at end of setting (DDMM.m format).
end_north_south	character(1)		Northern or Southern hemipshere for end latitude.
end_longitude	numeric(6,1)		Longitude at end of setting (DDDMM.m format).
end_east_west	character(1)		Eastern or Western hemisphere for end longitude.
cloud_cover	smallint		Cloud cover percent at start of setting.
wind_direction	smallint		Wind direction (bearing 0-359) at start of setting.
beaufort	smallint		Beaufort scale conditions at start of setting.
beaufort_lookup_key	numeric(9,0)	No	System generated lookup key for beaufort scale value.
period_1_start	time without time zone		Start time of observation period 1.
period_1_end	time without time zone		End time of observation period 1.

period_2_start	time without time zone		Start time of observation period 2.
period_2_end	time without time zone		End time of observation period 2.
period_3_start	time without time zone		Start time of observation period 3.
period_3_end	time without time zone		End time of observation period 3.
gear_code	character(3)		Gear code for the line set, refers to code on SLL Gear form.
hooks_set	integer		Number of hooks set.
hooks_observed	integer		Estimated number of hooks observed, derived from haul time not observed (generally less than hooks set where 12 hours haul duration is exceeded).
baskets_number	integer		Number of baskets deployed on set.
light_sticks_yn	character(1)		Presence of light sticks on line (Y/N).
light_stick_type	character(1)		Type of light sticks used: 1 = Chemical, 2 = Electric, 3 = Mixture of Chemical and Electric.
avg_sticks_per_basket	integer		Average number of light sticks per basket.
vessel_speed	numeric(3,1)		Vessel speed (knots).
snood_signal_time	smallint		Snood signal time (seconds).
line_setting_height	numeric(3,1)		Line setting height (m).
line_length	integer		Length of line (km).
setting_path	character(3)		3-part code for path of vessel while setting. Code detail on back of setting form.
setting_strategy	character(1)		Part one of setting path code - denotes strategy for the path of set.
setting_strategy_lookup_key	numeric(9,0)	No	System generated lookup key for setting_strategy.
setting_configuration	character(1)		Part two of setting path code - denotes physical configuration of path of set.
setting_config_lookup_key	numeric(9,0)	No	System generated lookup key for setting_configuration.
setting_turns	integer		Part three of setting path code - denotes number of turns during setting.
min_hook_depth	smallint		Minimum hook depth (m).
max_hook_depth	smallint		Maximum hook depth (m).
dist_stern_to_bait_min	smallint		Minimum distance from stern to bait entry point (m).
dist_stern_to_bait_max	smallint		Maximum distance from stern to bait entry point (m).
dist_bait_to_tori	smallint		Lateral distance from bait entry point to tori line (m).
bait_prop_wash_yn	character(1)		Whether bait lands inside vessels prop wash (Y/N/U).
acoustic_bird_deterrent_yn	character(1)		Whether acoustic bird deterrents were used as a mitigation strategy for protected species captures (Y/N/U).

water_cannon_yn	character(1)		Whether water cannons were used as a mitigation strategy for protected species captures (Y/N/U).
deck_light_yn	character(1)		Whether there was unnecessary deck lighting while setting (Y/N/U).
fishing_gear_discard_yn	character(1)		Whether fishing gear was discarded (Y/N/U).
discards_during_setting	character(1)		Whether there was any offal, bait or whole fish discarded during setting.
bait_1_species	character(3)		3-char species code for bait 1 species.
bait_1_composition	smallint		Percentage of total baited hooks comprising bait 1 species.
bait_1_state	character(1)		State of bait 1 species: F = Frozen, T = Thawed, S = Semi-thawed.
bait_1_dyed_yn	character(1)		Whether bait 1 was dyed (Y/N).
bait_2_species	character(3)		3-char species code for bait 2 species.
bait_2_composition	smallint		Percentage of total baited hooks comprising bait 2 species.
bait_2_state	character(1)		State of bait 2 species: F = Frozen, T = Thawed, S = Semi-thawed.
bait_2_dyed_yn	character(1)		Whether species 2 bait was dyed (Y/N).
bait_3_species	character(3)		3-char species code for bait 3 species.
bait_3_composition	smallint		Percentage of total baited hooks comprising bait 3 species.
bait_3_state	character(1)		State of bait 3 species: F = Frozen, T = Thawed, S = Semi-thawed.
bait_3_dyed_yn	character(1)		Whether species 3 bait was dyed (Y/N).
tori_used_yn	character(1)		Whether a tori line was deployed during setting (Y/N/U).
port_tori_gear_code	character(2)		Gear code of tori line attached on port side of vessel.
port_tori_problem_code	character(1)		Problem code for port side tori line.
port_tori_problem_lookup_key	numeric(9,0)	No	System generated lookup key for port tori problem code.
centre_tori_gear_code	character(2)		Gear code of tori line attached on centre of vessel.
centre_tori_problem_code	character(1)		Problem code for centre tori line.
centre_tori_problem_lookup_key	numeric(9,0)	No	System generated lookup key for centre tori problem code.
stbd_tori_gear_code	character(2)		Gear code of tori line attached on starboard side of vessel.
stbd_tori_problem_code	character(1)		Problem code for starboard side tori line.
stbd_tori_problem_lookup_key	numeric(9,0)	No	System generated lookup key for starboard tori problem code.
comments	character varying		Observer comments on line setting event.
start_date_time	timestamp without time zone		Start date time of the setting event.
decimal_start_latitude	numeric(8,6)		Start position latitude in decimal degrees (format DD.dddddd).
decimal_start_longitude	numeric(9,6)		Start position longitude in decimal degrees east of Greenwich (format DDD.dddddd)
start_display_latitude	character(9)		Start Latitude formatted for display purposes in format DD:MM.mS.

start_display_longitude	character(10)		Start Longitude formatted for display purposes in format DDD:MM.m[E|W], e.g. 172:34.5E with E for East.
end_date_time	timestamp without time zone		End date time of the setting event.
decimal_end_latitude	numeric(8,6)		End position latitude in decimal degrees (format DD.dddddd).
decimal_end_longitude	numeric(9,6)		End position longitude in decimal degrees east of Greenwich (format DDD.dddddd).
end_display_latitude	character(9)		End Latitude formatted for display purposes in format DD:MM.mS.
end_display_longitude	character(10)		End Longitude formatted for display purposes in format DDD:MM.m[E|W], e.g. 172:34.5E with E for East.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	Fishing event key derived from the trip key and set number.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_sll_2018_set" PRIMARY KEY, btree (trip_number, set_number)
"ui_y_sll_2018_set" UNIQUE CONSTRAINT, btree (fishing_event_key)
Foreign-key constraints:
"fk_y_sll_2018_set__t_species" FOREIGN KEY (target_species) REFERENCES z_species(code)
ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "y_sll_2018_haul" CONSTRAINT "fk_y_sll_2018_haul_ref" FOREIGN KEY (trip_number, set_number)
REFERENCES y_sll_2018_set(trip_number, set_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sll_bait

Comment: Profile on the bait strategy used on a range of tuna longline sets.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
start_set	smallint	No	Starting set for described bait strategy.
end_set	smallint	No	Final set for described bait strategy.
bait_number	integer	No	Bait number from the start of the basket, corresponds to snood_no from snoods table.
bait_code	integer	No	Code to identify type of bait used.
bait_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the bait code.
baskets_descript	character varying(75)		Brief description of the range of baskets to which arrangement applies, if blank applies to all baskets.
bait_usage_key	numeric(9,0)	No	System generated unique key to identify the bait_usage.
fishing_effort_extra_info_key	numeric(9,0)	No	System generated unique key to identify the fishing_effort_extra_info.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
  "pk_y_sll_bait" PRIMARY KEY, btree (bait_usage_key)
Foreign-key constraints:
  "fk_y_sll_bait_ref" FOREIGN KEY (trip_number)
   REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_y_sll_bait_ref2" FOREIGN KEY (bait_code) REFERENCES y_sll_bait_code(bait_code)
   ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sll_bait_code

Comment: Lookup list of bait codes used in Surface Long Lining.

Column	Type	Null?	Description
bait_code	integer	No	Code to identify type of bait used.
bait_type_description	character varying(512)	No	Description of the bait code.
bait_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Bait Code.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_sll_bait_code" PRIMARY KEY, btree (bait_code)

Referenced by:
TABLE "y_sll_bait" CONSTRAINT "fk_y_sll_bait_ref2" FOREIGN KEY (bait_code)
REFERENCES y_sll_bait_code(bait_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_sll_catch_specimen" CONSTRAINT "fk_y_sll_ctch_spec__bait" FOREIGN KEY (bait_code)
REFERENCES y_sll_bait_code(bait_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sll_catch_specimen

Comment: Description of catches of specimens (fish, birds, seals, etc) made by tuna longlines.

Column	Type	Null?	Description
specimen_id_number	integer	No	Unique identification number assigned to each specimen.
trip_number	integer	No	Trip number allocated by the observer programme.
set_number	smallint		Number assigned by observers to a distinct observed set.
sample_number	integer		Sample Number for the specimen, should be unique within the trip.
species	character(3)		Species code for the specimen recorded.
landed_time	time without time zone		The time observer recorded the specimen as being landed (24 hour time NZST).
species_status	integer		Code to identify the species status
species_status_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Species Status Code.
specimen_life_code	character varying(4)		Code to denote the level of the specimens life signs (used from 1992).
specimen_life_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Specimen Life Code.
handling_code	character varying(4)		Code to denote the crews handling of the specimen (used from 1992).
handling_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Handling Code.
life_status_landed	character(1)		Code to denote life status of specimen when landed or brought alongside vessel.
life_status_landed_lookup_key	numeric(9,0)		System generated lookup key associated with Life Status Landing.
fate	character(3)		Final fate of specimen - discard state, lost, unobserved; or primary processing type, if retained.
fate_lookup_key	numeric(9,0)	No	System generated lookup key associated with Fate code.
hook_location	character(1)		Hook location code. 1=Mouth, 2=Gullet, 3=Gills, 4=Gut, 5=Foul-Hooked.
hook_location_lookup_key	integer		System generated lookup key associated with Hook location code.
shark_handling	character varying(4)		Code to denote crew handling & treatment of sharks.
old_damage_code	character varying(2)		Code to describe the type and severity of damage to a specimen. Used up to the 1991 season, from 1992 the value has been captured in damage_code (with a new set of values).
damage_code	character varying(3)		Numeric code for the type of damage to the specimen (caused by driftnets, shark bites, etc) on specimens.

			Used from 1992 previously the value was captured in old_damage_code (with a different set of values).
damage_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Damage Code.
number_caught	integer		Number caught, including those recorded individually and those tallied.
fork_length	integer		Fork length of the specimen in centimetres. Except for billfish - lower jaw to fork.
length2	integer		Second length measurement for the specimen in centimetres.
length2_code	character(1)		Code to denote type of length recorded as length2 (for billfish & sharks); 2=Total Length, E=Eye to Fork Length (billfish).
greenweight	numeric(9,1)		Greenweight of the specimen in kilograms.
gw_method	integer		Code describing method used to obtain greenweight.
gw_meth_lookup_key	numeric(9,0)	No	System generated lookup key associated with GW Method code.
processing_code	character(4)		Code to indicate type of processing done on the specimen.
processed_weight	numeric(11,3)		Processed weight of the specimen in kilograms.
pw_method	integer		Code describing method used to weigh processed fish.
pw_meth_lookup_key	numeric(9,0)	No	System generated lookup key associated with PW Method code.
sex_code	integer		Code to Identify the sex of a fish, 1=male, 2=female, 3=unknown (unable to determine), 4=unsexed.
sex_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the fish sex code.
basket_number	integer		Number of the Basket (of hooks) in which specimen was caught. Not used since 1997.
bait_code	integer		Code to identify type of bait used. Not used since 1992.
bait_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the bait code.
sample_1_code	integer		Code for 1st sample taken from specimen.
sample_2_code	integer		Code for 2nd sample taken from specimen.
sample_3_code	integer		Code for 3rd sample taken from specimen.
sample_4_code	integer		Code for 4th sample taken from specimen.
sample_5_code	integer		Code for 5th sample taken from specimen.
sample_6_code	integer		Code for 6th sample taken from specimen.
sample_7_code	integer		Code for 7th sample taken from specimen.
sample_8_code	integer		Code for 8th sample taken from specimen.
true_species	character(3)		The species code as identified by a bird autopsy specialist or the Natural History Museum.

observation_type	smallint		Observation data type code: 1=observed, 2=tallied, 3=prior to start of observations, 4=after end of observations, 5=missed at unknown time during haul.
seabird_age	character(2)		Age of seabirds A=adult, AB=adult breeder, AN=adult nonbreeder, SA=subadult, I=immature, J=juvenile.
specimen_performance_code	integer		Performance flag for the catch specimen record: 1 = OK; 0 = Reject.
spec_perform_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Specimen Performance Code.
fishing_event_catch_spec_key	numeric(9,0)	No	System generated unique key to identify the fishing_event_catch_specimen.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	Fishing event key derived from the trip key and set number.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_sll_catch_specimen" PRIMARY KEY, btree (specimen_id_number)
Foreign-key constraints:
"fk_y_sll_catch_spec__handling" FOREIGN KEY (handling_code)
REFERENCES y_sll_handling_code(handling_code) ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_sll_catch_spec__life" FOREIGN KEY (specimen_life_code)
REFERENCES y_sll_specimen_life_code(specimen_life_code) ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_sll_catch_spec__process" FOREIGN KEY (processing_code)
REFERENCES y_sll_processed_code(processed_code) ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_sll_catch_spec__species" FOREIGN KEY (species) REFERENCES z_species(code)
ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_sll_catch_spec__ssc" FOREIGN KEY (species_status)
REFERENCES y_sll_species_status_code(species_status_code) ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_sll_ctch_spec__bait" FOREIGN KEY (bait_code) REFERENCES y_sll_bait_code(bait_code)
ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_sll_ctch_spec_sc1" FOREIGN KEY (sample_1_code)
REFERENCES y_sll_sample_code(sample_code) ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_sll_ctch_spec_sc2" FOREIGN KEY (sample_2_code)

```
    REFERENCES y_sll_sample_code(sample_code)     ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_y_sll_ctch_spec_sc3" FOREIGN KEY (sample_3_code)
    REFERENCES y_sll_sample_code(sample_code)     ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_y_sll_ctch_spec_sc4" FOREIGN KEY (sample_4_code)
    REFERENCES y_sll_sample_code(sample_code)     ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_y_sll_ctch_spec_sc5" FOREIGN KEY (sample_5_code)
    REFERENCES y_sll_sample_code(sample_code)     ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_y_sll_ctch_spec_sc6" FOREIGN KEY (sample_6_code)
    REFERENCES y_sll_sample_code(sample_code)     ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_y_sll_ctch_spec_sc7" FOREIGN KEY (sample_7_code)
    REFERENCES y_sll_sample_code(sample_code)     ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_y_sll_ctch_spec_sc8" FOREIGN KEY (sample_8_code)
    REFERENCES y_sll_sample_code(sample_code)     ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
  TABLE "y_sll_2015_stomach" CONSTRAINT "fk_y_sll_2015_stomach_ref" FOREIGN KEY (specimen_id_number)
    REFERENCES y_sll_catch_specimen(specimen_id_number)     ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "y_sll_stomach" CONSTRAINT "fk_y_sll_stomach_ref" FOREIGN KEY (specimen_id)
    REFERENCES y_sll_catch_specimen(specimen_id_number)
```

Table y_sll_damage_code

Comment: Codes to describe the type of damage sustained to a landed specimen.

Column	Type	Null?	Description
damage_code	character(2)	No	Code to identify the type of damage to a specimen (caused by driftnets, shark bites, etc) (used from 1992).
damage_type_description	character varying(512)	No	Description of the damage code.
damage_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Damage Code.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_sll_damage_code" PRIMARY KEY, btree (damage_code)

Table y_sll_event_code

Comment: Event codes used to describe interruptions to hauling and observations of the hauling.

Column	Type	Null?	Description
event_code	integer	No	Code to identify the described event.
event_description	character varying(512)	No	Description of the described event code.
event_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Event Code.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_sll_event_code" PRIMARY KEY, btree (event_code)
Referenced by:
TABLE "y_sll_events" CONSTRAINT "fk_y_sll_event__ec" FOREIGN KEY (event_code)
REFERENCES y_sll_event_code(event_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sll_events

Comment: Profile of events affecting fishing effort such as SLL haul observations.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
set_number	smallint	No	Number assigned by observers to a distinct observed set.
time_start	time without time zone		The time the event occurred or started.
event_code	integer	No	Code to identify the described event.
event_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Event Code.
minutes_number	integer		Number of minutes described event lasted for. Note that prior to 1991 it recorded the duration of the whole set.
event_comment	character varying(512)		Comment about the event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
fishing_effort_event_key	numeric(9,0)	No	System generated lookup key associated with the fishing effort event.
event_comment_key	numeric(9,0)	No	System generated key associated with the event comment.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
  "pk_y_sll_events" PRIMARY KEY, btree (fishing_effort_event_key)
Foreign-key constraints:
  "fk_y_sll_event__ec" FOREIGN KEY (event_code) REFERENCES y_sll_event_code(event_code)
   ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sll_handling_code

Comment: Valid Specimen handling codes and associated descriptions.

Column	Type	Null?	Description
handling_code	character(4)	No	Code to denote the crews handling of the specimen (used from 1992).
handling_description	character varying(512)	No	Description of the handling code.
handling_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Handling Code.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_sll_handling_code" PRIMARY KEY, btree (handling_code)
Referenced by:
TABLE "y_sll_catch_specimen" CONSTRAINT "fk_y_sll_catch_spec__handling" FOREIGN KEY (handling_code)
REFERENCES y_sll_handling_code(handling_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sll_haul

Comment: Hourly information of observed tuna longline hauls.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
set_number	smallint	No	Number assigned by observers to a distinct observed set.
haul_date	date	No	Date on which the haul commenced.
observation_time	time without time zone		Time of observation of haul (HH:MM).
haul_latitude	integer		Haul position latitude at observation time (format DDMM).
haul_longitude	integer		Haul position longitude at observation time (format DDDMM).
haul_east_west	character(1)		Haul position meridian, E or W at observation time.
decimal_haul_latitude	numeric(8,6)		Haul position latitude at observation time in decimal degrees (format DD.dddddd).
decimal_haul_longitude	numeric(9,6)		Haul position longitude at observation time in decimal degrees east of Greenwich (format DDD.dddddd).
trunc_haul_latitude	numeric(3,1)		Haul position latitude at observation time in decimal degrees truncated to 1/10th of a degree (format DD.d).
trunc_haul_longitude	numeric(4,1)		Haul position longitude at observation time in decimal degrees truncated to 1/10th of a degree (format DD.d).
bottom_depth	integer		Depth of bottom at time of observation in metres.
surface_temperature	numeric(3,1)		Sea surface temperature (decimal degrees C).
vessel_speed	numeric(3,1)		Speed of the vessel at the time of observation in knots.
vessel_heading	smallint		Vessels heading at time of observation in degrees (0 to 360).
wind_beaufortscale	smallint		Beaufort scale wind force at time of observation in range 0 to 12.
wind_direction	smallint		Wind direction at time of observation in degrees (0 to 360).
end_hauled_first	character(1)		Code describing at which end of the longline was hauled first: 1=the end that was set first, 2=the end that was set last.
start_finish_code	character(1)		Code to identify significant observation records for each haul: S=Start (first record), F=finish (last record), O=Observer observations end (usually when 12 hours worked),

			L=Late start by observer.
start_finish_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the record_status (Start , Finish) Code.
haul_performance_code	smallint		Performance flag for the haul record 1 = OK; 2 = Reject.
haul_performance_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Haul Performance Code.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated key to identify the associated event.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
haul_effort_key	numeric(9,0)	No	The system generated key to identify each surface lining haul event.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_sll_haul" PRIMARY KEY, btree (haul_effort_key)
Foreign-key constraints:
"fk_y_sll_haul_ref" FOREIGN KEY (trip_number, set_number)
REFERENCES y_sll_line_set(trip_number, set_number)

Table y_sll_line_set

Comment: Profile information on all observed sets of tuna longlines.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
set_number	smallint	No	Number assigned by observers to a distinct observed set.
set_date_start	date		Date at which the set started.
set_date_end	date		Date at which the set ended.
tuna_area	integer		Code that defines southern bluefin and bigeye tuna area the set started in.
bird_area	integer		Code for the bird area setting started in.
fma_code	integer		Fisheries Management Area that the set started in.
target_species	character(3)		Species Code for the species being targeted.
start_time	time without time zone		Start time (24 hour format, NZST).
start_latitude	numeric(5,1)		Start position latitude (DDMM.m).
start_longitude	numeric(6,1)		Start position longitude (DDDMM.m).
start_east_west	character(1)		Start position meridian, E or W.
end_time	time without time zone		End time (24 hour format, NZST).
end_latitude	numeric(5,1)		End position latitude (DDMM.m).
end_longitude	numeric(6,1)		End position longitude (DDDMM.m).
end_east_west	character(1)		End position meridian, E or W.
line_length	numeric(9,3)		Length of line in kilometres.
basket_number	integer		Number of baskets on the line.
hooks_set	integer		Number of hooks set on the line.
hooks_observed	integer		Estimated number of hooks observed, derived from haul time not observed (generally less than hooks set where 12 hours haul duration is exceeded).
vessel_speed	numeric(7,3)		Speed of the vessel during the set in knots.
snood_signal_time	smallint		The snood signal time in seconds.
line_feed_rate	smallint		Line feeder rate in metres per second.
buoy_length	integer		Length between buoy at surface and connection to mainline below in metres.
min_depth	integer		Expected minimum depth of the line when set in metres.
max_depth	integer		Expected maximum depth of the line when set in metres.
ccamlr_tori_pole_yn	character(1)		Whether the Tori Pole used was to Ccamlr specifications (Y/N).

tori_used_yn	character(1)		Indicates presence/absence of tori (bird) poles on the set.
streamer_number	integer		Number of streamers used in association with tori pole.
tori_length	integer		Length of tori line (metres).
tori_height	integer		Height of attachment of tori line above the water (metres).
line_entry_yn	character(1)		Whether the Tori line was over bait entry point. (Yes or No).
bait_stream	integer		Distance between bait landing point and tori line in metres.
bait_wake_yn	character(1)		Whether the bait was landing inside of vessel wake (Y/N).
bait_vessel	integer		Distance between bait landing point and vessel midline in metres.
bait_sink	integer		Distance behind vessel that bait sank in metres.
cloud_cover	integer		Percentage of cloud cover at start of the set.
barometer_reading	numeric(5,1)		Barometer reading at start of the set.
start_wind_direction	numeric(3,0)		Wind direction at start of the set (degrees 0 to 359).
start_wind_force	smallint		Wind force at start of set (Beaufort scale 0-12).
weather_code	integer		Code to identify weather conditions, an integer value between 1 and 127.
weather_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Weather Code.
bait_condition_code	character(4)		Whether the Bait was frozen or thawed (values F Frozen, T thawed).
bait_condition_lookup_key	numeric(9,0)	No	System generated lookup key associated with the bait condition code.
bait_thrower_used_yn	character(1)		Whether a Mechanical bait thrower was used (Y/N).
number_of_vessels	integer		The number of vessels within a 24 nautical mile radius.
number_of_longliners	integer		The number of longliners within a 24 nautical mile radius.
set_observation_datetime	timestamp without time zone		Date time of observation of set details using time of observation and Set Date (if observation time is later than set start time) otherwise Set Date + 1 day
set_observation_time	time without time zone		Time of observation of set details (hhmm).
set_performance_code	integer		Performance flag for the line set: 1 = OK; 0 = Reject.
set_perform_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Set Performance Code.
decimal_start_latitude	numeric(8,6)		Start set position latitude in decimal degrees (format DD.dddddd).
decimal_start_longitude	numeric(9,6)		Start set position longitude in decimal degrees east of Greenwich (format DDD.dddddd).
decimal_end_latitude	numeric(8,6)		End set position latitude in decimal degrees (format DD.dddddd).
decimal_end_longitude	numeric(9,6)		End set position longitude in decimal degrees east of Greenwich (format DDD.dddddd).

trunc_start_latitude	numeric(3,1)		Start set position latitude in decimal degrees truncated to 1/10th of a degree (format DD.d).
trunc_start_longitude	numeric(4,1)		Start set position longitude in decimal degrees east of Greenwich truncated to 1/10th of a degree (formatDDD.d).
trunc_end_latitude	numeric(3,1)		End set position latitude in decimal degrees truncated to 1/10th of a degree (format DD.d).
trunc_end_longitude	numeric(4,1)		End set position longitude in decimal degrees east of Greenwich truncated to 1/10th of a degree (format DDD.d).
start_display_latitude	character(9)		Start Latitude formatted for display purposes in format DD:MM.S.
start_display_longitude	character(10)		Start Longitude formatted for display purposes in format DDD:MM.m[E|W].
end_display_latitude	character(9)		End Latitude formatted for display purposes in format DD:MM.mS.
end_display_longitude	character(10)		End Longitude formatted for display purposes in format DDD:MM.m[E|W].
comments	character varying(80)		Any information pertinent to the set not included in other attributes.
event_key	numeric(9,0)	No	System generated key to identify the event associated with the lfs trawl event.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
fishing_event_type_key	numeric(9,0)	No	The system generated key associated with the type of fishing event (e.g. Trawl Effort, Surface Lining Effort) based on Method
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		No Colon separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_sll_line_set" PRIMARY KEY, btree (trip_number, set_number)
"ui_y_sll_line_set__fek" UNIQUE, btree (fishing_event_key)
Check constraints:
"y_sll_lset_check_end_e_w" CHECK (end_east_west = 'E'::bpchar OR end_east_west = 'W'::bpchar)
"y_sll_lset_check_start_e_w" CHECK (start_east_west = 'E'::bpchar OR start_east_west = 'W'::bpchar)
Foreign-key constraints:
"fk_y_sll_line_set__target_sp" FOREIGN KEY (target_species) REFERENCES z_species(code)
ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_sll_line_set_ref" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Referenced by:
TABLE "y_sll_haul" CONSTRAINT "fk_y_sll_haul_ref" FOREIGN KEY (trip_number, set_number)
REFERENCES y_sll_line_set(trip_number, set_number)

Table y_sll_processed_code

Comment: Valid fish processed codes used in Surface Long Lining.

Column	Type	Null?	Description
processed_code	character(4)	No	Code for fish processed type that was weighed.
processed_type_description	character varying(512)	No	Description of processed code.
processed_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Processed Code.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_sll_processed_code" PRIMARY KEY, btree (processed_code)
Referenced by:
TABLE "y_sll_catch_specimen" CONSTRAINT "fk_y_sll_catch_spec__process" FOREIGN KEY (processing_code)
REFERENCES y_sll_processed_code(processed_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sll_sample_code

Comment: Sample codes used to describe the type of sample taken from a specimen.

Column	Type	Null?	Description
sample_code	integer	No	Code used to identify type of sample taken from specimen.
sample_description	character varying(512)	No	Description of sample taken.
sample_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Sample Code.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_sll_sample_code" PRIMARY KEY, btree (sample_code)

Referenced by:
TABLE "y_sll_catch_specimen" CONSTRAINT "fk_y_sll_ctch_spec_sc1" FOREIGN KEY (sample_1_code)
REFERENCES y_sll_sample_code(sample_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_sll_catch_specimen" CONSTRAINT "fk_y_sll_ctch_spec_sc2" FOREIGN KEY (sample_2_code)
REFERENCES y_sll_sample_code(sample_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_sll_catch_specimen" CONSTRAINT "fk_y_sll_ctch_spec_sc3" FOREIGN KEY (sample_3_code)
REFERENCES y_sll_sample_code(sample_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_sll_catch_specimen" CONSTRAINT "fk_y_sll_ctch_spec_sc4" FOREIGN KEY (sample_4_code)
REFERENCES y_sll_sample_code(sample_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_sll_catch_specimen" CONSTRAINT "fk_y_sll_ctch_spec_sc5" FOREIGN KEY (sample_5_code)
REFERENCES y_sll_sample_code(sample_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_sll_catch_specimen" CONSTRAINT "fk_y_sll_ctch_spec_sc6" FOREIGN KEY (sample_6_code)
REFERENCES y_sll_sample_code(sample_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_sll_catch_specimen" CONSTRAINT "fk_y_sll_ctch_spec_sc7" FOREIGN KEY (sample_7_code)
REFERENCES y_sll_sample_code(sample_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_sll_catch_specimen" CONSTRAINT "fk_y_sll_ctch_spec_sc8" FOREIGN KEY (sample_8_code)
REFERENCES y_sll_sample_code(sample_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sll_snoods

Comment: Profile on the snood arrangement strategy used on a range of tuna longline sets.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
snood_number	smallint	No	Snood number to which the data applies, corresponds to bait_no in the bait table.
start_set	smallint	No	Starting set to which the snood arrangement applies.
end_set	smallint	No	Final set to which snood arrangement applies.
total_length	integer		Total length of the identified snood in metres.
hook_colour	character varying(30)		Colour of the hook on the snood.
hook_type	character varying(30)		Type of hook on the snood.
baskets_descript	character varying(75)		Brief description of the range of baskets to which arrangement applies, if not present then applies to all baskets.
snood_usage_key	numeric(9,0)	No	Unique identifier of the snood usage.
fishing_effort_extra_info_key	numeric(9,0)	No	System generated unique key to identify the fishing_effort_extra_info.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
  "pk_y_sll_snoods" PRIMARY KEY, btree (snood_usage_key)
Foreign-key constraints:
  "fk_y_sll_snoods_ref" FOREIGN KEY (trip_number)
   REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sll_species_status_code

Comment: Valid Species status codes used for Surface Long Lining.

Column	Type	Null?	Description
species_status_code	integer	No	Code to identify the species status
species_status_description	character varying(512)	No	Description of the species status code.
species_status_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Species Status Code.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_sll_species_status_code" PRIMARY KEY, btree (species_status_code)
Referenced by:
TABLE "y_sll_catch_specimen" CONSTRAINT "fk_y_sll_catch_spec__ssc" FOREIGN KEY (species_status)
REFERENCES y_sll_species_status_code(species_status_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sll_specimen_life_code

Comment: Valid Specimen life sign codes and descriptions.

Column	Type	Null?	Description
specimen_life_code	character(4)	No	Code to denote the level of the specimens life signs (used from 1992).
specimen_life_signs_descript	character varying(512)	No	Description of the specimen life code.
specimen_life_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Specimen Life Code.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_sll_specimen_life_code" PRIMARY KEY, btree (specimen_life_code)
Referenced by:
TABLE "y_sll_catch_specimen" CONSTRAINT "fk_y_sll_catch_spec__life" FOREIGN KEY (specimen_life_code)
REFERENCES y_sll_specimen_life_code(specimen_life_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sll_stomach

Comment: Stomach sample data from fish caught on tuna surface longlines (SLL) vessels.

Column	Type	Null?	Description
specimen_id	integer	No	Unique identification number assigned to each specimen.
trip_number	integer	No	The trip number assigned to each observed trip allocated by the observer programme.
set_number	smallint	No	Observed set to which following data applies.
sample_number	integer	No	Number assigned by observer to samples taken.
fish	smallint		Percentage of fish in the stomach contents.
crust	smallint		Percentage of crustaceans in the stomach contents.
squid	smallint		Percentage of squid in the stomach contents.
bait	smallint		Percentage of bait species in the stomach contents.
salps	smallint		Percentage of salps in the stomach contents.
other	smallint		Percentage of other or unknown species in the stomach contents.
plastic_ingested	character(1)		Code for type of plastic ingested.
plastic_ingested_lookup_key	numeric(9,0)	No	System generated lookup key associated with the plastic ingested.
plastic_external	character(1)		Code for type of external plastic.
plastic_external_lookup_key	numeric(9,0)	No	System generated lookup key associated with the plastic external.
stom_empty	character(1)		Code E denotes stomach was empty.
fish_code	character(3)		Code for fish species eaten, where known.
crust_code	character(3)		Code for crustacean species eaten, where known.
crust_lookup_key	numeric(9,0)	No	System generated lookup key associated with the bait code.
bait_code	character(3)		Code for bait species eaten, where known.
bait_lookup_key	numeric(9,0)	No	System generated lookup key associated with the bait code.
other_code	character(3)		Code for other food type eaten, where known.
other_lookup_key	numeric(9,0)	No	System generated lookup key associated with the other code.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	Fishing event key derived from the trip key and set number.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.

created_date date No Date this row was created.
Indexes:
"pk_y_sll_stomach" PRIMARY KEY, btree (specimen_id)
Check constraints:
"y_sll_stomach_check_bait" CHECK (bait >= 0 AND bait <= 100)
"y_sll_stomach_check_crust" CHECK (crust >= 0 AND crust <= 100)
"y_sll_stomach_check_fish" CHECK (fish >= 0 AND fish <= 100)
"y_sll_stomach_check_other" CHECK (other >= 0 AND other <= 100)
"y_sll_stomach_check_salps" CHECK (salps >= 0 AND salps <= 100)
"y_sll_stomach_check_squid" CHECK (squid >= 0 AND fish <= 100)
Foreign-key constraints:
"fk_y_sll_stomach_ref" FOREIGN KEY (specimen_id)
REFERENCES y_sll_catch_specimen(specimen_id_number)

Table y_sll_weather_code

Comment: Valid Weather codes used for Surface Long Lining.

Column	Type	Null?	Description
weather_code	integer	No	Code to identify weather conditions, an integer value between 1 and 127.
weather_description	character varying(512)	No	Description of the weather_code.
weather_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Weather Code.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_sll_weather_code" PRIMARY KEY, btree (weather_code)

Table y_sys_next_key

Comment: Table to generate next keys.

Column	Type	Null?	Description
next_key_name	character varying(50)		Name to be used to find next key value e.g. fishing_event_catch_key.
next_key	numeric(9,0)	No	Next value for key for key name, add 1 after using each key.

Table y_sys_stage_error_log

Comment: A log of all errors found in processing the data.

Column	Type	Null?	Description
stage_error_log_key	numeric(9,0)	No	System Generated unique identifier for each error message.
trip_number	integer	No	The Observer Programme allocated trip number against which the error was detected.
sequence_number_1	integer		First additional sequence number against the error e.g. Tow Number, Set Number, Log Number.
sequence_number_2	integer		Second additional sequence number against the error e.g. Log Number, Group Number.
table_name	character varying(50)	No	The (primary) stage table name where the error was detected.
column_name	character varying(50)	No	The name of the (primary) column containing the error.
error_message_number	integer	No	Number identifying the error detected.
error_description	character varying(512)		The description of the error detected including the erroneous data.
error_date	date	No	The datetime the error was detected.
species_code	character(3)		The species code (if appropriate against which the error was detected).
table_key	numeric(10,0)	No	The (primary) table key (e.g. fishing_event_key) associated with the error.

Indexes:
"pk_y_sys_stage_error_log" PRIMARY KEY, btree (stage_error_log_key)
Foreign-key constraints:
"fk_y_sys_st_reference_y_error_" FOREIGN KEY (error_message_number)
REFERENCES y_error_message(error_message_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_sys_trip_keys

Comment: Table to store a trip key for each trip.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this row was created.

Indexes:
"pk_y_sys_trip_keys" PRIMARY KEY, btree (trip_number)
"ui_y_sys_trip_keys" UNIQUE, btree (trip_key)

Table y_tori_2018_line

Comment: Tori line details. From Tori line details form, Version 3, August 2018.

Column	Type	Null?	Description
tori_key	numeric(9,0)	No	System generate key to denote unique tori line records.
trip_number	integer	No	Trip number allocated by the observer programme.
observer_code	character(4)		Observer code, typically first name initial followed by the first three letters of observers surname.
measure_date	date		Date measurements made by the observer.
gear_code	character varying(2)	No	Equipment code consisting of the letter T plus a number. Each tori line measured during the trip is numbered from 1 onwards.
measure_reason	character(1)		Code to explain why this measurement was taken: I = Initial measurement, D = description of the device in a Damaged state, R = measurement of the device after it has been Repaired, O = some Other reason for this measurement.
measure_type	character(1)		Indicates whether a F=Full record or a P=Partial measurement of the tori line.
based_on	character(2)		Where a Partial measurement is taken, this is the Equipment Code (eg T1) of the tori line that has been altered.
line_length	integer		The length of the line (in metres) rounded down to the nearest metre.
line_diameter	smallint		The diameter of the line used (in millimetres) rounded down to the nearest millimetre.
aerial_extent	integer		Aerial extent of tori line (m).
recovery_rope_yn	character(1)		Presence of tori line recovery rope (Y/N).
attach1_tension_release_yn	character(1)		Presence of a tension release for the attachment point (Y/N).
attach1_height	smallint		Height of attachment point above water (m).
attach1_distance	numeric(3,1)		Lateral distance (m) from centre of stern to attachment point.
attach1_port_stbd	character(1)		Port or Starboard lateral distance for attachment point measurement.
attach1_dist_stern	numeric(3,1)		Distance from stern to the attachment point (m).
attach1_adjustable_yn	character(1)		Whether attachment point is adjustable (Y/N).
attach2_tension_release_yn	character(1)		Whether dual attachment point has a tension release (Y/N).
attach2_height	smallint		Height above water (m) for dual attachment point.

attach2_distance	numeric(3,1)	Lateral distance (m) from centre of stern to dual attach point.
attach2_port_stbd	character(1)	Port or Starboard lateral distance for dual attachment point measurement.
attach2_dist_join_stern	smallint	Distance from join to stern (m).
attach2_dist_join_point	smallint	Distance from join to attachment point (m).
attach2_streamer_join_yn	character(1)	Presence of streamers between second attachment point and join (Y/N).
long_streamer_yn	character(1)	Presence of long streamers (Y/N).
long_streamer_material	character(3)	Long streamer material type: T = plastic Tubing, S = plastic Strapping, O = Other (describe in comments).
long_streamer_distance	smallint	Maxmimum distance between long streamers (m).
long_streamer_pair_single	character(1)	Whether streamers are S= Single or P = Paired.
long_streamer_number	smallint	Number of long streamers or pairs.
long_streamer_max_length	numeric(3,1)	Maximum length of long streamers (m).
long_streamer_min_length	numeric(3,1)	Minimum length of long streamers (m).
long_streamer_diameter	integer	Diameter of long streamers (mm).
long_streamer_colour_code	character(4)	Colour code for Long streamers: P = Pink R = Red C = orange (Carrot) Y = Yellow G = Green B = Blue W = Brown F = Faded (any colour) O = Other (describe in comments).
long_streamer_dist_first	smallint	Distance to first long streamer that reaches water (m).
long_streamer_aerial_yn	character(1)	Whether long streamers cover aerial extent (Y/N).
long_streamer_touch_water_yn	character(1)	Whether all long streamers touch water surface. Defunct from Version 3 onwards.
long_streamer_height_water	numeric(3,1)	The maximum height of long streamers above the water surface (m). Defunct from Version 3 onwards.
long_streamer_num_touch_water	smallint	Number of long streamers that touch water.
light_streamer_yn	character(1)	Presence of light streamers (Y/N).
light_streamer_material	character varying(3)	Light streamer material type: T = plastic Tubing, S = plastic Strapping, O = Other (describe in comments).

light_streamer_distance	smallint		Distance between light streamers (m).
light_streamer_pair_single	character(1)		Whether light streamers are S = Single or P = Paired.
light_streamer_number	smallint		Number of light streamers/pairs.
light_streamer_max_length	numeric(3,1)		Maximum light streamer length (m).
light_streamer_min_length	numeric(3,1)		Minimum light streamer length (m).
light_streamer_diameter	smallint		Diameter of light streamers (mm).
light_streamer_colour_code	character(4)		Colour code for Light streamers: P = Pink R = Red C = orange (Carrot) Y = Yellow G = Green B = Blue W = Brown F = Faded (any colour) O = Other (describe in comments).
tow_object_yn	character(1)		Presence of towed object (Y/N).
tow_object_code	character(1)		Type of towed object - refer to back of form or manual for types and their codes.
tow_object_size	numeric(4,1)		Size or weight of towed object. Refer to back of form or manual for specific size or weight measurement methods.
comments	character varying		Comments recorded by the observer.
tow_object_lookup_key	numeric(9,0)	No	System generated lookup key associated with type of towed object.
measure_type_lookup_key	numeric(9,0)	No	System generated lookup key associated with type of measurement.
reason_lookup_key	numeric(9,0)	No	System generated lookup key associated with the reason for measurement.
colours_lookup_key	numeric(9,0)	No	System generated lookup key associated with tori line colours.
materials_lookup_key	numeric(9,0)	No	System generated lookup key associated with tori line material.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:

"pk_y_tori_2018_line" PRIMARY KEY, btree (tori_key)

"ui_y_tori_2018_line" UNIQUE, btree (trip_number, gear_code)
"ndx_y_tori_2018_trip" btree (trip_number)
"ndx_y_tori_2018_tripkey" btree (trip_key)
Foreign-key constraints:
"fx_y_tori_2018_line_ref" FOREIGN KEY (trip_key)
REFERENCES y_observer_trip_master(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_tori_line

Comment: Tori line details.

Column	Type	Null?	Description
tori_key	bigint	No	Tori line key.
trip_number	integer		Trip number allocated by the observer programme.
equipment_code	character varying(2)		Equipment code consisting of the letter T plus a number. Each tori line measured during the trip is numbered from 1 onwards.
obs1	character(5)		First initial followed by the first three letters of observers surname involved in the measurement of the device.
obs2	character(5)		As for obs 1.
measure_date	date		Date that the measurements were made.
measure_reason	character(1)		Code to explain reason this measurement was taken: I = Initial measurement D = description of the device in a Damaged state R = measurement of the device after it has been Repaired O = some Other reason for this measurement.
measure_type	character(1)		Full to indicate that this is a full record of measurements. If changes then Partial and an Equipment code (eg T1) of the device that has been altered entered.
based_on	character varying(2)		Where a Partial measurement the Equipment Code (eg T1) of the tori line that has been altered.
line_diameter	smallint		The diameter of the line used (in millimetres) rounded down to the nearest millimetre.
line_length	integer		The length of the line (in metres) rounded down to the nearest metre.
reference_point	character(1)		The location of the point of attachment: B= trawl block used as a reference point (trawlers), E= bait entry point used as a reference point (long liners), O= some other point used as a reference point.
reference_location	character(1)		Location of the reference point: P = port side S = starboard side

		C = central.
distance_side	numeric(3,1)	Distance from the reference point to the attachment in the port/starboard direction.
side_code	character(1)	Whether the attachment point is to port (P) or to starboard (S) of the reference point.
distance_along	numeric(3,1)	Distance from the reference point to the attachment in the forward/aft direction.
along_code	character(1)	Whether the attachment point is to forward (F) or aft (A) of the reference point.
distance_vertical	numeric(3,1)	Distance from the reference point to the attachment point in the vertical direction.
vertical_code	character(1)	Attachment point is above (A) or below (B) the reference point.
tow_object	character(1)	Type of towed object: F = inverted funnel or plastic cone L = length of thick line K = knot or loop of thick line B = buoy N = netted buoy S = sack or bag W = weight Z = no towed object O = other type of towed object.
object_size	numeric(4,2)	Size of the towed object, in metres or kg depending on type of towed object.
streamers_number	integer	The number of streamers, not counting multiple branches off a streamer as separate streamers.
maximum_gap	numeric(4,2)	The largest gap from one streamer to the next, in metres.
minimum_branches	smallint	The minimum number of branches on any streamer on the line.
maximum_branches	smallint	The maximum number of branches on any streamer on the line.
minimum_length	numeric(4,2)	The minimum length of any branch of any streamer on the line, in metres.
maximum_length	numeric(4,2)	The maximum length of any branch of any streamer on the line, in metres.
minimum_dia	numeric(5,2)	The minimum diameter of any branch of any streamer on the line (in millimetres).

maximum_dia	numeric(5,2)	The maximum diameter of any branch of any streamer on the line (in millimetres).
colours	character varying(8)	All the different streamer colours observed: P pink R red C carrot (orange) Y yellow G green B blue W brown F faded colour (any colour) O other.
materials	character varying(8)	Code for all the different streamer materials observed: T plastic tubing S plastic strapping O other.
comments	character varying(512)	
measure_type_lookup_key	numeric(9,0)	System generated lookup key associated with the measure type.
reason_lookup_key	numeric(9,0)	System generated lookup key associated with the measure reason.
ref_point_lookup	numeric(9,0)	System generated lookup key associated with the the point of attachment code.
ref_loc_lookup	numeric(9,0)	System generated lookup key associated with the location of the reference point code.
side_lookup_key	numeric(9,0)	System generated lookup key associated with the side code.
along_lookup_key	numeric(9,0)	System generated lookup key associated with the along code.
vertical_lookup_key	numeric(9,0)	System generated lookup key associated with the vertical code.
tow_object_lookup_key	numeric(9,0)	System generated lookup key associated with the tow object.
colours_lookup_key	numeric(9,0)	System generated lookup key associated with the colours.
materials_lookup_key	numeric(9,0)	System generated lookup key associated with the materials.
trip_key	numeric(9,0)	System generated trip key to identify the trip.
error_highest_level	smallint	The highest error level associated with the error messages for the row.
error_count	integer	The number of error messages for the row.
error_text	character varying(512)	Comma separated short error texts for errors for the row.
created_date	date	Date this row was created.

Indexes:
"pk_y_tori_line" PRIMARY KEY, btree (tori_key)
"ndx_y_tori_trip" btree (trip_number)
"ndx_y_tori_tripkey" btree (trip_key)
Foreign-key constraints:
"fk_y_tori_line_ref" FOREIGN KEY (trip_key) REFERENCES y_observer_trip_master(trip_key)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_trawl_components

Comment: Stores the codes for each groundgear component and general feature of a trawl gear system, recorded in the y_trawl_gear table, with the associated lookup key.

Column	Type	Null?	Description
trawl_gear_part_key	numeric(9,0)	No	Unique key for each trawl gear component from a trawl gear detail descriptions.
trip_number	integer	No	Trip number allocated by the observer programme.
gear_equipment_code	character varying(5)	No	Gear equipment code for the trawl system.
component_type	character(1)	No	Code for the component type T = general features, G = ground gear components.
component	character(1)	No	Code for the general or ground gear feature present within the trawl system.
component_lookup_key	numeric(9,0)	No	System generated lookup key associated with the component code.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
trawl_gear_key	numeric(9,0)	No	Unique key for each trawl gear details record.
created_date	date	No	Date this event record was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.

Indexes:
  "pk_y_trawl_components" PRIMARY KEY, btree (trawl_gear_part_key)
  "ui_y_trawl_components" UNIQUE, btree (trip_key, gear_equipment_code, component_type, component)
Foreign-key constraints:
  "fk_y_trawl_components_ref" FOREIGN KEY (trawl_gear_key)
   REFERENCES y_trawl_gear(trawl_gear_key)

Table y_trawl_gear

Comment: Details of each separate trawl gear system used by a vessel.

Column	Type	Null?	Description
trawl_gear_key	numeric(9,0)	No	Unique key for each trawl gear details record.
trip_number	integer	No	Trip number allocated by the observer programme.
gear_equipment_code	character varying(5)		3 part gear equipment code. Part 1 - the number of trawl nets that are part of this gear. Part 2 - the type of trawl eg BT, MW, BPT or MPT. Part 3 - Sequential number identifying this piece of gear.
number_of_warps	smallint		The number warps the vessel is using.
door_spread	integer		The design Doorspread (m).
door_type	character(1)		The door type code: C = Combination door (bottom or midwater) H = High aspect door (used in midwater trawls off the bottom) L = Low aspect door (used when bottom fishing) O = Other
door_lookup_key	numeric(9,0)		System generated Lookup key associated with the door_type code.
door_area	numeric(4,2)		The door area, measured or from net plans, in square metres rounded to the nearest 0.1.
sweep_length	integer		The average length (m) of wire which connects the door to the bridle.
bridle_length	integer		The average length (m) of the top bridle.
trawl_wingless	character(1)		Y indicates that the trawl was wingless. N indicates that the trawl was winged. U could not determine.
headline_height	numeric(4,1)		The headline height that this trawl is currently designed to operate at.
headline_length	numeric(4,1)		The total length (m) of the headline.
wing_spread	integer		Wingspread (m)from the net plans unless the original value is no longer valid.
max_size_groundgear	integer		The maximum diameter (mm) of the largest structure (bobbin, disc etc) that is part of the ground gear.
number_of_codends	smallint		The number of codends that are part of this trawl system.
lengthener_mesh_size	smallint		The nominal mesh size (mm) used in the lengthener section of the net.
lengthener_mesh_config	character(1)		Lengthener mesh configuration codes: D = Diamond mesh H = Hexagonal mesh

			S = Square mesh T = T90 mesh (diamond mesh turned 90 degrees) O = Other.
lengthener_mesh_lookup_key	numeric(9,0)		System generated lookup key associated with the lengthener mesh code.
codend_mesh_size	smallint		The nominal mesh size (mm) used in the codend section of the net.
codend_mesh_config	character(1)		Codend mesh configuration codes: D = Diamond mesh H = Hexagonal mesh S = Square mesh T = T90 mesh (diamond mesh turned 90 degrees) O = Other.
codend_mesh_lookup_key	numeric(9,0)		System generated lookup key associated with the codend mesh code.
comments	character varying(512)		Any comments for the described trawl gear.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this record was created.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.

Indexes:
  "pk_y_trawl_gear" PRIMARY KEY, btree (trawl_gear_key)
  "ui_y_trawl_gear" UNIQUE, btree (trip_key, gear_equipment_code)
Referenced by:
  TABLE "y_trawl_components" CONSTRAINT "fk_y_trawl_components_ref" FOREIGN KEY (trawl_gear_key)
   REFERENCES y_trawl_gear(trawl_gear_key)

Table y_trip_observer

Comment: Observer details for a trip.

Column	Type	Null?	Description
trip_observer_key	integer	No	System generated key to identify the observer on a trip.
trip_number	integer	No	Trip number allocated by the observer programme.
observer_key	numeric(9,0)	No	System generated key to identify the observer.
observer_name	character varying(50)		Name of the observer, in either <Last Name>, <First Name> format or <First Name> <Last Name> format.
observer_code	character(4)		Unique observer code. The first initial followed by the first 3 letters of observers surname, unless this is not unique.
trip_key	integer	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date		Date this row was created.

Indexes:
  "pk_y_rip_observer" PRIMARY KEY, btree (trip_observer_key)
  "ui_y_trip_observer" UNIQUE, btree (trip_key, observer_key)
  "ndx_y_obs_trip" btree (trip_number)
  "ndx_y_obs_trip_key" btree (trip_key)
Foreign-key constraints:
  "fk_y_trip_observer__obs" FOREIGN KEY (observer_key)
   REFERENCES y_ref_observer(observer_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_y_trip_observer__trip" FOREIGN KEY (trip_number)
   REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_trip_vessel

Comment: Details from MPI (OTR) of trip and vessel details.

Column	Type	Null?	Description
trip_number	integer		Trip identification number issued by the observer group.
trip_start	date		The date at the start of the trip.
trip_end	date		The date at the end of the trip.
vessel_key	numeric(9,0)		The Ministry of Fisheries allocated key for the vessel.
vessel_name	character varying(64)		The name of the vessel.
previous_name	character varying(64)		Previous name of the vessel, if any.
vessel_id	character varying(20)		Identification for a vessel, typically registration number but if vessel is foreign licensed then call_sign is typically used.
call_sign_id	character varying(32)		Radio call sign for the vessel.
msa_number	character varying(32)		NZ Maritime Safety Authority number of the vessel.
lloyds_imo_id	character varying(20)		International Maritime Organisation number assigned by Lloyds Register to the vessel.
flag_nationality	character varying(20)		Flag nationality of the vessel, e.g. NEW ZEALAND, AUSTRALIA, JAPAN etc.
reg_type	character varying(20)		Registration type, e.g. Domestic, Foreign Chartered, Foreign Licensed.
built_year	integer		The year the vessel was built.
overall_length	numeric(7,3)		Overall length of the vessel in metres.
beam_metres	numeric(7,3)		Beam of the vessel in metres.
draught_metres	numeric(7,3)		The draught of the vessel in metres.
gross_tonnes	numeric(9,2)		The gross tonnage of the vessel in tonnes.
engine_kilowatts	numeric(9,3)		Engine power in kilowatts.
freeze_product_yn	character varying(8)		If the vessel has ability to freeze product, Y or N.
meal_processing_yn	character varying(8)		If the vessel has a meal plant, Y or N.
base_region_code_desc	character varying(32)		The name of the region or port where the vessel is based.
max_duration_days	smallint		The maximum duration of a trip for the vessel in days.
max_speed_knots	numeric(7,3)		Maximum speed of the vessel in knots.
total_crew_number	smallint		The maximum crew size associated with this vessel at the time of the trip.
concat_target_species	character varying(32)		List of target species expected for the trip.

concat_fmas	character varying(64)		List of FMAs expected to be fished in for the trip.
concat_observers	character varying(128)		List of observers for the trip.
status	character varying(32)		Status; Cancelled, In progress, Missing or Planned.
remarks	text		Comments or remarks.
trip_vessel_key	integer	No	System generated unique key to identify the record.
created_date	date		The date this record was created.
updated_date	date		Most recent date this record was updated.

Indexes:
"pk_y_trip_vessel" PRIMARY KEY, btree (trip_vessel_key)
"ndx_y_trip_vessel_trip" btree (trip_number)
"ndx_y_trip_vessel_vessel_key" btree (vessel_key)

Table y_troll_activities

Comment: Activities from the Trolling Hourly Observation form.

Column	Type	Null?	Description
troll_activity_key	numeric(10,0)	No	System generated key to identify the troll activity.
troll_key	numeric(9,0)		Key for troll hourly form.
trip_number	integer		Trip number allocated by the observer programme.
activity	character varying(3)		Code for any change of activity.
activity_lookup_key	numeric(9,0)		System generated lookup key associated with the activity.
activity_time	time without time zone		Time an activity started (NZST).
details	character varying(256)		Details of the activity.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date this row was created.

Indexes:
  "pk_y_troll_activities" PRIMARY KEY, btree (troll_activity_key)
Foreign-key constraints:
  "fk_y_troll_activities_y_troll_hourly" FOREIGN KEY (troll_key)
   REFERENCES y_troll_hourly(troll_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_troll_calibration

Comment: Calibration calibration for troll trips.

Column	Type	Null?	Description
troll_calibration_key	numeric(9,0)	No	System generated key to identify the troll calibration.
trip_number	integer	No	Trip number allocated by the observer programme.
calibration_date	date	No	The date of calibration.
calibration_time	time without time zone		The calibration time.
vessel_temperature	numeric(3,1)		The vessel sea surface temperature in degrees Celsius.
observer_temperature	numeric(3,1)		The Observers sea surface temperature in degrees Celsius.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Colon separated short error texts for errors for the row.
created_date	date		Date this record was created.

Indexes:
  "pk_y_troll_calibration" PRIMARY KEY, btree (troll_calibration_key)
Foreign-key constraints:
  "fk_y_troll_y_observer_trip_master" FOREIGN KEY (trip_number)
   REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_troll_catch

Comment: Troll catch for an observed period.

Column	Type	Null?	Description
troll_catch_key	numeric(10,0)	No	System generated key to identify the troll catch.
troll_key	numeric(9,0)	No	Key for troll hourly form.
trip_number	integer	No	Trip number allocated by the observer programme.
species	character(3)		Species code.
retained	smallint		Number of fish caught and retained for the time period.
not_retained	smallint		Number of fish caught and not retained for the time period.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date this row was created.

Indexes:
  "pk_y_troll_catch" PRIMARY KEY, btree (troll_catch_key)
  "index_space" btree (troll_key)
Foreign-key constraints:
  "fk_y_troll_catch_y_troll_hourly" FOREIGN KEY (troll_key)
   REFERENCES y_troll_hourly(troll_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_troll_configuration

Comment: Details about configuration used on a trolling vessel for a fishing trip.

Column	Type	Null?	Description
troll_config_key	numeric(9,0)	No	System generated key to identify the troll configuration.
trip_number	integer		Trip number allocated by the observer programme.
observer_code	character(5)		Unique observer code. The first initial followed by the first 3 letters of observers surname, unless this is not unique.
mainline_material	character(1)		The code for the material that the lines are made of.
mainline_material_lookup_key	numeric(9,0)		System generated Lookup key associated with the mainline material code.
mainline_diameter	smallint		The diameter of the mainlines in millimetres.
shock_absorbers	character(1)		Y if shock absorbers were used and an N if shock absorbers not used.
shock_absorber_material	character varying(40)		Material shock absorbers were made of if used.
trace_material	character(1)		The code for the material that the traces are made of.
trace_material_lookup_key	numeric(9,0)		System generated Lookup key associated with the trace material code.
trace_test	smallint		The nominal breaking strength of the line in pounds (lbs).
trace_length	integer		The average length of the traces in metres.
comments	character varying(512)		
diagram_id	character varying(22)		Diagram identification reference, not used.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date this record was created.

Indexes:
  "pk_y_troll_configuration" PRIMARY KEY, btree (troll_config_key)
Foreign-key constraints:
  "fk_y_troll__reference_y_observ" FOREIGN KEY (trip_number)
   REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_troll_gear

Comment: Vessel and observer details from the Observer Trolling Fishing Gear form.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
observer_code	character(5)		Unique observer code. The first initial followed by the first 3 letters of observers surname, unless this is not unique.
comments	character varying(512)		
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date this record was created.

Indexes:
"pk_y_troll_gear" PRIMARY KEY, btree (trip_number)
Foreign-key constraints:
"fk_y_troll__reference_y_observ" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "y_troll_heads" CONSTRAINT "fk_y_troll__reference_y_troll_" FOREIGN KEY (trip_number)
REFERENCES y_troll_gear(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_troll_hooks" CONSTRAINT "fk_y_troll__reference_y_troll_" FOREIGN KEY (trip_number)
REFERENCES y_troll_gear(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_troll_skirts" CONSTRAINT "fk_y_troll__reference_y_troll_" FOREIGN KEY (trip_number)
REFERENCES y_troll_gear(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_troll_heads

Comment: Details about heads from Trolling Fishing Gear Form.

Column	Type	Null?	Description
troll_head_key	numeric(9,0)	No	System generated key to identify the troll heads record.
trip_number	integer	No	Trip number allocated by the observer programme.
head_id	character(1)	No	Identification letter for the troll head.
head_weight	numeric(3,1)		The nominal weight of the head in ounces.
head_length	smallint		The length of the head from top to bottom (mm, rounded down to the nearest mm).
head_shape	character(1)		The code for the shape of the cross section of the head piece.
head_shape_lookup_key	numeric(9,0)		System generated Lookup key associated with the head shape code.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date this record was created.

Indexes:
  "pk_y_troll_heads" PRIMARY KEY, btree (troll_head_key)
  "ui_y_troll_heads" UNIQUE, btree (trip_number, head_id)
Foreign-key constraints:
  "fk_y_troll__reference_y_troll_" FOREIGN KEY (trip_number)
   REFERENCES y_troll_gear(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_troll_hooks

Comment: Details about hooks from Trolling Fishing Gear Form.

Column	Type	Null?	Description
troll_hook_key	numeric(9,0)	No	System generated key to identify the troll hooks.
trip_number	integer	No	Trip number allocated by the observer programme.
hook_id	character(1)	No	Identification letter for the hook details.
hook_size	smallint		The size of the hook opening measured from the tip of the hook across to the shaft of the hook (mm).
hook_type	character(1)		The code for the type of hook used.
hook_type_lookup_key	numeric(9,0)		System generated Lookup key associated with the hook type code.
hook_barbs	character(1)		Whether there were barbs on the hook: Y or N.
hook_material	character(1)		The code for the material the hook was made of.
hook_material_lookup_key	numeric(9,0)		System generated Lookup key associated with the hook material code.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date this record was created.

Indexes:
  "pk_y_troll_hooks" PRIMARY KEY, btree (troll_hook_key)
  "ui_y_troll_hooks" UNIQUE, btree (trip_number, hook_id)
Foreign-key constraints:
  "fk_y_troll__reference_y_troll_" FOREIGN KEY (trip_number)
   REFERENCES y_troll_gear(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_troll_hourly

Comment: Hourly observations of trolling effort.

Column	Type	Null?	Description
troll_key	numeric(9,0)	No	Key for troll hourly form.
trip_number	integer		Trip number allocated by the observer programme.
station_number	integer		System generated station number for each recorded troll hourly observation
start_date	date		Date of the trolling observation.
observer_code	character(5)		Unique observer code. The first initial followed by the first 3 letters of observers surname, unless this is not unique.
start_time	time without time zone		Start time of hourly observation.
end_time	time without time zone		End time of hourly observation derived from start time of next hourly observation, except for when last fishing period of the day = end of fishing time.
observed_yn	character(1)		Y if observer gather information or if not N (off shift).
latitude	numeric(5,1)		Vessel latitude (format DDMM.m).
n_s	character(1)		North or South latitude.
longitude	numeric(6,1)		Vessel longitude (format DDDMM.m).
e_w	character(1)		East or West longitude.
fma	character(3)		Fisheries Management Area (FMA) code.
target_species	character(3)		Target species code.
lines_fished	smallint		Number of lines being fished.
vessel_speed	numeric(3,1)		Vessel speed in knots.
wind_speed	numeric(3,1)		Wind speed in knots.
wind_dir	character varying(3)		Wind direction eg NE.
sea_state	smallint		Sea state from specification table provided by MFish.
sea_state_lookup_key	numeric(9,0)		System generated lookup key associated with the sea_state.
cloud_cover	smallint		Cloud cover as fraction of 8.
surface_temp	numeric(3,1)		Sea surface temperature, degrees Celsius.
nonfish_yn	character(1)		Non-fish bycatch occurred during the observation period.
decimal_latitude	numeric(8,6)		Latitude of the position at the time of the observation in decimal degrees.
decimal_longitude	numeric(9,6)		Longitude of the position at the time of the observation in decimal degrees.

trunc_latitude	numeric(3,1)	Latitude of the position in decimal degrees truncated to 1/10th of a degree (format DD.d).
trunc_longitude	numeric(4,1)	Longitude of the position in decimal degrees truncated to 1/10th of a degree (format DD.d).
display_latitude	character(9)	Latitude formatted for display purposes in format DD:MM.mS.
display_longitude	character(10)	Longitude formatted for display purposes in format DDD:MM.m[E|W].
fishing_end_time	time without time zone	Fishing end time for the last form of the day.
comments	character varying(512)	
trip_key	numeric(9,0)	System generated trip key to identify the trip.
event_key	numeric(9,0)	System generated key to identify the associated event.
fishing_event_key	numeric(9,0)	System generated key of the associated fishing event.
fishing_event_key_type	numeric(9,0)	
error_highest_level	smallint	The highest error level associated with the error messages for the row.
error_count	integer	The number of error messages for the row.
error_text	character varying(512)	Comma separated short error texts for errors for the row.
created_date	date	Date this record was created.

Indexes:
"pk_y_troll_hourly" PRIMARY KEY, btree (troll_key)
Foreign-key constraints:
"fk_y_troll_y_observer_trip_master" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "y_troll_activities" CONSTRAINT "fk_y_troll_activities_y_troll_hourly" FOREIGN KEY (troll_key)
REFERENCES y_troll_hourly(troll_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_troll_catch" CONSTRAINT "fk_y_troll_catch_y_troll_hourly" FOREIGN KEY (troll_key)
REFERENCES y_troll_hourly(troll_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_troll_skirts

Comment: Details about skirts from Trolling Fishing Gear Form.

Column	Type	Null?	Description
troll_skirt_key	numeric(9,0)	No	System generated key to identify the troll skirts.
trip_number	integer		Trip number allocated by the observer programme.
skirt_id	character(1)	No	Identification letter for the troll skirt.
skirt_material	character(1)		Code for the troll skirt material, e.g. P = Plastic, F = Feathers, O = Other (see comments).
skirt_material_lookup_key	numeric(9,0)		System generated lookup key associated with the skirt material.
skirt_length	smallint		Length of troll skirt in mm.
skirt_description	character varying(128)		Troll skirt description including colour.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date this row was created.

Indexes:
  "pk_y_troll_skirts" PRIMARY KEY, btree (troll_skirt_key)
Foreign-key constraints:
  "fk_y_troll__reference_y_troll_" FOREIGN KEY (trip_number)
   REFERENCES y_troll_gear(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_troll_temperature

Comment: Header details from trolling Temperature Calibration form.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
observer_code	character(5)		Unique observer code. The first initial followed by the first 3 letters of observers surname, unless this is not unique.
comments	character varying(512)		Comments
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Colon separated short error texts for errors for the row.
created_date	date		Date this record was created.

Indexes:
  "pk_z_troll_temperature" PRIMARY KEY, btree (trip_key)
Foreign-key constraints:
  "fk_y_troll_y_temperature" FOREIGN KEY (trip_number)
   REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_trw_new_observer_greenweight

Comment: For each tow landed on the vessel, greenweights for each species are estimated. These estimates are recorded in the new_observer_greenweight, which records the trip and station number, the group number, species, estimated greenweight, and codes describing how the greenweight was estimated.+

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
group_number	integer		Sequential number for a group (by tow daily) of processed records.
tow_number	integer	No	Sequential identifier for each tow.
species	character(3)	No	Species code for the estimated greenweight.
species_weight	numeric(11,3)		Greenweight of species caught in kilograms.
greenweight_calc_method	character varying(4)		Method used to establish greenweight (see logbook instructions).
greenweight_calc_lookup_key	numeric(9,0)		System generated Lookup key associated with the greenweight calculation code.
fishing_event_catch_key	numeric(10,0)	No	System generated unique key to identify the fishing_event_catch.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.
location_analysis	character varying(4)		The greenweight method, Part 1: The code for location of the catch at time of analysis.
location_lookup	numeric(9,0)		System generated lookup key associated with the greenweight method, Part 1: location of the analysis.
method_analysis	character varying(3)		The greenweight method, Part 2: The code for method used for analysis eg K = weighted in full.
method_lookup	numeric(9,0)		System generated lookup key associated with the greenweight method, Part 2: the method used for analysis eg K = weighted in full.

Indexes:
"pk_y_trw_new_observer_greenweight" PRIMARY KEY, btree (fishing_event_catch_key)
"ndx_y_trw_new_obs_gw__species" btree (species)

"ndx_y_trw_new_obs_gw__tow" btree (tow_number)
"ndx_y_trw_new_obs_gw__trip" btree (trip_number)

Table y_trw_new_observer_proc_summary

Comment: Summary data for all processed fish products for a species by process group, i.e., a summary of the records held in new_observer_processed, since May 1990.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
processing_date	date		Date on which processing took place.
tows_number	integer		Number of tows covered by processed catch.
meal_produced	numeric(11,3)		Weight of meal produced in kilograms.
oil_produced	numeric(9,3)		Amount of fish oil produced in litres.
total_calc_greenweight	numeric(11,3)		Sum of calculated_greenweights in kilograms.
processing_event_catch_key	numeric(9,0)	No	System generated unique identifier of the processing_event_catch.
processing_event_key	numeric(9,0)	No	System generated unique identifier of the associated processing_event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.
tow_min	smallint		Minimum tow this processed data applies to. July 2007 ver 3 logbooks.
tow_max	smallint		Maximum tow this processed data applies to. July 2007 ver 3 logbooks.
tow_range	character varying(12)		The number of the first and the last tow that this record applies to. P refers to Part tows, e.g. 31P.

Indexes:
  "new_observer_proc_summary_group_indx" btree (group_number)
  "new_observer_proc_summary_trip_indx" btree (trip_number)
Foreign-key constraints:
  "fk_y_trw_new_obs_proc_summary_ref" FOREIGN KEY (trip_number)
   REFERENCES y_observer_trip_master(trip_number)

Table y_trw_new_observer_processed

Comment: Details of processed fish products by species, as recorded in the catch and effort logbook since May 1990.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
species	character(3)		Species Code for the processed weight summary recorded.
processed_state	character(3)		Code to identify the state to which the fish has been processed to.
processed_state_lookup	integer		System generated Lookup key associated with processed state.
grade_code	character varying(12)		Code to identify the grade code of the product.
grade_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Grade Code.
processed_weight	numeric(11,3)		Calculated processed weight in kilograms as number_of_units * unit_weight.
units_number	integer		Number of cartons/trays/bags produced for that species, state and grade.
unit_number_tag	smallint		A tag which identifies whether the number of units was determined by the vessel or by the observer: 1 = vessel count (now obsolete), 2 = observer count, 3 = Daily vessel count, 4 = Tow by tow vessel count.
unit_weight	numeric(6,2)		The weight of that particular unit in kilograms.
unit_weight_tag	smallint		A tag which identifies whether the unit weight was determined by the vessel or by the observer: 1 = vessel weight, 2 = observer derived weight.

conversion_factor	numeric(7,4)		Conversion factor applied to processed product to get weight of fish processed.
con_factor_tag	smallint		Code to identify which conversion factor was used (see logbook instructions).
con_factor_tag_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Conversion Factor Tag Code.
other_product_code	character(4)		Code to identify other products (see logbook instructions).
other_product_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Other Product Code.
other_product_weight	numeric(11,3)		Weight of other product produced in kilograms.
fish_mealed_greenweight	numeric(11,3)		The greenweight of fish mealed in kilograms.
meal_method_code	character(2)		Code to identify method of analysis of fish mealed (see logbook instructions).
meal_method_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Meal Method Code.
fish_discarded_greenweight	numeric(11,3)		The greenweight of fish discarded in kilograms.
discard_method_code	character(2)		Code to identify method of analysis of fish discarded (see logbook instructions).
discard_method_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Discard Method Code.
calculated_greenweight	numeric(11,3)		Calculated greenweight based on number_of_units * unit_weight * conversion_factor in kilograms.
processing_event_key	numeric(9,0)	No	System generated unique identifier of the processing_event.
process_event_catch_detail_key	numeric(9,0)	No	System generated unique identifier of the processed_event_catch_detail.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this row was created.

tow_range	character varying(12)	The number of the first and the last tow that this record applies to. P refers to Part tows, e.g. 31P.
unit_number_tag_lookup_key	numeric(9,0)	System generated lookup key associated with the unit number tag.
unit_weight_tag_lookup_key	numeric(9,0)	System generated lookup key associated with the unit weight tag.
error_highest_level	smallint	The highest error level associated with the error messages for the row.
error_count	integer	The number of error messages for the row.
error_text	character varying(512)	Comma separated short error texts for errors for the row.
location_of_analysis	character(1)	Location of fish at time of analysis for weight.
loc_of_analysis_lookup_key	numeric(9,0)	System generated lookup key associated with the location of analysis.
method_analysis	character varying(3)	The method of analysis of weight.
method_analysis_lookup_key	numeric(9,0)	System generated lookup key associated with the method of analysis.
tow_min	smallint	Minimum tow this processed data applies to. July 2007 ver 3 logbooks.
tow_max	smallint	Maximum tow this processed data applies to. July 2007 ver 3 logbooks.
complete_flag	character(1)	
detail_key	integer	

Indexes:
  "ndx_y_trw_new_obs_processed__group" btree (group_number)
  "ndx_y_trw_new_obs_processed__species" btree (species)
  "ndx_y_trw_new_obs_processed__trip" btree (trip_number)

Table y_trw_new_observer_station

Comment: Station data from the catch and effort logbook since 1997.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
tow_number	integer	No	Sequential identifier for each tow.
start_date	date		Date at start of tow.
target_species	character(3)		Species Code for the species being targeted.
gear_code	character(5)		Net identifier (BT = bottom trawl, MW = midwater).
headline_height	numeric(4,1)		Vertical opening distance of net in metres.
fma_code	character(7)		Fisheries Management Area associated with the tow.
path_of_tow	character varying(6)		Three part code to define type and path of tow. Part 1 refers to bottom or midwater, part 2 refers to configuration e.g. A = straight line, part 3 is the number of turns.
fishing_on_marks	smallint		Code to identify fishing on marks.
fishing_on_marks_lookup_key	numeric(9,0)	No	System generated Lookup key associated with the fishing on marks code.
fishing_on_marks_1	character(1)		Code to identify whether the vessel was actively targeting fish sign: 0 = No, 1 = Yes, First character of fishing_on_marks prior to 1990.
fishing_on_marks_1_lookup_key	numeric(9,0)	No	System generated Lookup key associated with the fishing on marks (part 1) code.
fishing_on_marks_2	smallint		Code to identify who shot the net (Coding structure made up by Observers) Previously second character of Fishing_on_marks_code.
fishing_on_marks_2_lookup_key	numeric(9,0)	No	System generated Lookup key associated with the fishing on marks (part 2) code.
start_time	integer		Start time (24 hour format).
start_time_code	character(4)		Code to identify what the start time refers to (see logbook instructions).
start_time_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Start Time Code.
start_latitude	numeric(5,1)		Start position latitude (format DDMM.m).
start_longitude	numeric(6,1)		Start position longitude (format DDDMM.m).
start_east_west	character(1)		Start position meridian, E or W.

start_groundline_depth	integer		Depth to headline at the start of tow in metres.
start_bottom_depth	integer		Depth to seabed at the start of tow in metres.
surface_temperature	numeric(3,1)		Sea surface temperature (decimal degrees C).
headline_temperature	numeric(3,1)		Sea temperature at the headline (degrees).
fishing_speed	numeric(3,1)		Speed of vessel in knots while fishing (trawl speed).
period_not_fishing	integer		Duration between start and end-time when net not fishing (hr and min HHMM).
end_time	integer		End time (24 hour format).
end_time_code	character(4)		Code to identify the type of end time recorded.
end_time_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the end time code.
end_latitude	numeric(5,1)		End position latitude (format DDMM.m).
end_longitude	numeric(6,1)		End position longitude (format DDDMM.m).
end_east_west	character(1)		End position meridian, E or W.
end_groundline_depth	integer		Depth to headline at the end of the tow in metres.
end_bottom_depth	integer		Depth to seabed at the end of tow in metres.
total_surface_greenweight	integer		Total weight of catch when net surfaces (kg).
total_board_greenweight	integer		Weight of catch when net hauled aboard in kilograms. This will equal total_greenweight_on_surface unless fish are lost from the net.
greenweight_method	character(4)		Code to identify method used to determine total greenweight on board.
greenwt_method_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the greenweight method code.
fish_loss_code	character(2)		Code to identify the type of fish loss (see logbook instructions).
fish_loss_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the fish loss code.
fish_loss_1_code	smallint		Code to identify the type of fish loss below the surface. Previously first character of Fish Loss Code.
fish_loss_1_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the fish loss code (part 1).
fish_loss_2_code	smallint		Code to identify the type of fish loss at the surface or on the ramp. Previously second character of Fish Loss Code.
fish_loss_2_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the fish loss code (part 2).
length_frequency_yn	character(1)		Whether length frequency (biological data) collected from this tow.
start_display_latitude	character(9)		Start Latitude formatted for display purposes in format DD:MM.mS.
start_display_longitude	character(10)		Start Longitude formatted for display purposes in format DDD:MM.m[E|W], e.g. 172:34.5E with E for East.

end_display_latitude	character(9)		End Latitude formatted for display purposes in format DD:MM.mS.
end_display_longitude	character(10)		End Longitude formatted for display purposes in format DDD:MM.m[E|W], e.g. 172:34.5E with E for East.
event_key	numeric(9,0)	No	System generated key to identify the event associated with the lfs trawl event.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
fishing_event_type_key	numeric(9,0)	No	The system generated key associated with the type of fishing event (e.g. Trawl Effort, Surface Lining Effort) based on Method
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.
start_date_time	timestamp without time zone		
end_date_time	timestamp without time zone		
shot_offal_discharge	character(1)		Code to describe what happened to any offal produced during the time of shooting.
shot_offal_lookup_key	numeric(9,0)		System generated lookup key associated with the shot_offal_discharge column.
shot_fish_discharge	character(1)		Code to describe what happened to any whole fish discards produced during the time of shooting.
shot_fish_lookup_key	numeric(9,0)		System generated lookup key associated with the shot_fish_discharge column.
start_code_1	character(1)		Start code part 1, who determined the start of tow information.
start_code_1_lookup_key	numeric(9,0)		System generated lookup key associated with start_code_1.
start_code_2	character(1)		Start code part 2, what point was identified as the start of the tow, eg C = the point at which the brakes went on, D = the point at which the net reached target depth and position.
start_code_2_lookup_key	numeric(9,0)		System generated lookup key associated with start_code_2.
headline_tag	character(1)		A tag which identifies the source of the headline height used: 1 = headline height taken from net sonde measurements, 2 = headline height a standard figure (e.g. from net plans), 3 = headline height from skipper.
headline_tag_lookup_key	numeric(9,0)		System generated lookup key associated with the headline_tag.

doorspread	numeric(4,1)	The horizontal distance between the doors of the net (in metres) as measured by the door sensors.
beaufort_scale	character(2)	The number on the Beaufort scale that best represents the sea state, (0 - 12).
beaufort_scale_lookup_key	numeric(9,0)	System generated lookup key associated with the beaufort scale.
gear_events	character varying(4)	Codes to indicate that a gear event has occurred. e.g. A = Net torn, B = Net caught/fast, C = Winch failure during setting etc.
gear_events_lookup_key	numeric(9,0)	System generated lookup key associated with the gear_events.
tow_offal_discharge	character(1)	Code to describe what happened to any offal produced during the tow.
tow_offal_lookup_key	numeric(9,0)	System generated lookup key associated with the tow_offal_discharge column.
tow_fish_discharge	character(1)	Code to describe what happened to any whole fish discards produced during the tow.
tow_fish_lookup_key	numeric(9,0)	System generated lookup key associated with the tow_fish_discharge column.
end_code_1	character(1)	End code part 1, who determined the end of tow information.
end_code_1_lookup_key	numeric(9,0)	System generated lookup key associated with end_code_1.
end_code_2	character(1)	End code part 2, what point was identified as the end of the tow.
end_code_2_lookup_key	numeric(9,0)	System generated lookup key associated with end_code_2.
end_date	date	Date at end of the tow.
net_surface_time	time without time zone	Time at which the codend of the net was first seen at the surface.
net_onboard_time	time without time zone	Time at which the net was brought on board or the first fish was emptied from the net onto the deck.
haul_offal_discharge	character(1)	Code to describe what happened to any offal produced during the time of hauling.
haul_offal_lookup_key	numeric(9,0)	System generated lookup key associated with the haul_offal_discharge column.
haul_fish_discharge	character(1)	Code to describe what happened to any whole fish discards produced during the time of hauling.
haul_fish_lookup_key	numeric(9,0)	System generated lookup key associated with the haul_fish_discharge column.
mitigation_equipment	character varying(12)	Mitigation equipment codes as 1 or more 2 character codes, e.g. S1 or B1T1 etc.
mitigation_events	character varying(12)	Mitigation event codes, as 1 or more 1 character codes.
mitigation_event_lookup_key	numeric(9,0)	System generated lookup key associated with the mitigation events.
nonfish_bycatch	character(1)	Code to show whether any non-fish bycatch (seabird, marine mammal, marine reptile) occurred. Y = Yes, N = No, U = Not observed.

benthic_material	character(1)	Code to show whether any benthic materials came up in the tow. Y = Yes, N = No, U = Not observed.
comment_catchweight	character varying(512)	
comment_tow	character varying(512)	
start_north_south	character(1)	Start latitude hemisphere North or South (N or S).
end_north_south	character(1)	End latitude hemisphere North or South (N or S).
decimal_start_latitude	numeric(8,6)	Start position latitude in decimal degrees (format DD.dddddd).
decimal_start_longitude	numeric(9,6)	Start position longitude in decimal degrees east of Greenwich (format DDD.dddddd).
decimal_end_latitude	numeric(8,6)	End position latitude in decimal degrees (format DD.dddddd).
decimal_end_longitude	numeric(9,6)	End position longitude in decimal degrees east of Greenwich (format DDD.dddddd).
trunc_start_latitude	numeric(3,1)	Start position latitude in decimal degrees truncated to 1/10th of a degree (format DD.d).
trunc_start_longitude	numeric(4,1)	Start position longitude in decimal degrees east of Greenwich truncated to 1/10th of a degree (format DDD.d).
trunc_end_latitude	numeric(3,1)	End position latitude in decimal degrees truncated to 1/10th of a degree (format DD.d).
trunc_end_longitude	numeric(4,1)	End position longitude in decimal degrees east of Greenwich truncated to 1/10th of a degree (format DDD.d).
tow_type	character(1)	Code for tow type, from part one of the fishing path: 1= bottom throughout, 2= midwater at relatively constant depth, 3= midwater in a broad range of depths, 4= mixed bottom & midwater.
tow_type_lookup_key	numeric(9,0)	System generated Lookup key associated with the tow type code.
tow_configuration	character(1)	Code for tow configuration, from part 2 of the fishing path, e.g. A = Straight line, E = Constant depth contour, etc.
tow_configuration_lookup_key	numeric(9,0)	System generated lookup key associated with the Tow Configuration code.
tow_turns	integer	Number of turns during tow, from part 3 of the fishing path.

Indexes:
"pk_y_trw_new_observer_station" PRIMARY KEY, btree (trip_number, tow_number)
"ui_y_trw_new_observer_station" UNIQUE, btree (fishing_event_key)

"ndx_y_trw_new_obs_station__s_date" btree (start_date)
"ndx_y_trw_new_obs_station__t_species" btree (target_species)
Foreign-key constraints:
"fk_y_trw_new_observer_station_ref" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_trw_new_observer_stn__tspecies" FOREIGN KEY (target_species)
REFERENCES z_species(code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_trw_observer_greenweight

Comment: For each tow landed on the vessel, greenweights for each species are estimated. These estimates are recorded in the observer_greenweight, which records the trip and station number, the group number, species, estimated greenweight, and codes describing how the greenweight was estimated.+

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
group_number	integer		Sequential number for a group (by tow daily) of processed records.
tow_number	integer	No	Sequential identifier for each tow.
species	character(3)	No	Species Code for the estimated greenweight.
species_weight	numeric(11,3)		Greenweight of species caught in kilograms.
greenweight_calc_method	character(4)	No	Code to identify the method used to establish greenweight (see logbook instructions).
fishing_event_catch_key	numeric(9,0)	No	System generated unique key to identify the fishing_event_catch.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this row was created.
greenweight_calc_lookup_key	numeric(9,0)		System generated lookup key associated with the greenweight_calc_method column.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
loc_of_analysis_lookup_key	numeric(9,0)		
method_analysis_lookup_key	numeric(9,0)		

Indexes:
  "pk_y_trw_observer_greenweight" PRIMARY KEY, btree (trip_number, tow_number, species, greenweight_calc_method)
  "ui_y_trw_observer_gw" UNIQUE, btree (fishing_event_catch_key)
  "ndx_y_trw_new_obs_gw_species" btree (species)
  "ndx_y_trw_new_obs_gw_tow_num" btree (tow_number)
  "ndx_y_trw_new_obs_gw_trip_num" btree (trip_number)
Foreign-key constraints:
  "fk_y_trw_observer_gw_ref" FOREIGN KEY (trip_number, tow_number)

REFERENCES y_trw_observer_station(trip_number, tow_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_trw_observer_proc_calc

Comment: Summary data for each species in observer_processed (only up to April 1990).

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
species	character(3)	No	Species Code for the processed weight summary recorded.
fish_mealed_greenweight	numeric(11,3)		The greenweight of fish mealed in kilograms.
meal_method_code	character(4)		Code to identify method of analysis of fish mealed (see logbook instructions).
meal_method_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Meal Method Code.
discard_method_code	character(4)		Code to identify the method of analysis of fish discarded (see logbook instructions).
calculated_greenweight	numeric(11,3)		Calculated greenweight in kilograms as number_of_units x*unit_weight * conversion_factor.
processing_event_key	numeric(9,0)	No	System generated unique identifier of the processing_event.
processed_species_summary_key	numeric(9,0)	No	System generated unique identifier of the processed_species_summary.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated key to identify the event associated with the processing summary.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.
fish_discarded	integer		

Indexes:
"ndx_y_trw_obs_proc_calc__group" btree (group_number)
"ndx_y_trw_obs_proc_calc__species" btree (species)
"ndx_y_trw_obs_proc_calc__trip" btree (trip_number)

Table y_trw_observer_proc_summary

Comment: Summary data for all processed fish products for a species by process group, i.e., a summary of the records held in observer_processed, from 1986 to April 1990.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
log_number	integer		Unique number printed on the logbook.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
meal_produced	numeric(11,3)		Weight of meal produced in kilograms.
oil_produced	numeric(9,3)		Amount of fish oil produced in litres.
discard_species1	character(3)		Species code of first discarded species.
discard_species2	character(3)		Species code of second discarded species.
total_fish_mealed	numeric(11,3)		Total greenweight of fish mealed in kilograms
total_fish_discarded	numeric(11,3)		Total greenweight of fish discarded in kilograms.
total_calc_greenweight	numeric(11,3)		Sum of calculated_greenweights in kilograms.
processing_event_catch_key	numeric(9,0)	No	System generated unique identifier of the processing_event_catch.
processing_event_key	numeric(9,0)	No	System generated unique identifier of the associated processing_event.
event_key	numeric(9,0)	No	System generated key to identify the event associated with the lfs trawl event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.

Indexes:
  "pk_y_trw_observer_proc_summary" PRIMARY KEY, btree (trip_number, group_number)
Foreign-key constraints:
  "fk_y_trw_observer_proc_summary_ref" FOREIGN KEY (trip_number)
   REFERENCES y_observer_trip_master(trip_number)

Table y_trw_observer_processed

Comment: Details of processed fish products by species, as recorded in the catch and effort logbook from 1986 to April 1990. +

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
species	character(3)	No	Species Code for the processed weight recorded.
processed_state	character(4)	No	Code to identify the state to which the fish has been processed to.
processed_weight	numeric(11,3)		Total processed weight for the Trip/ Group/ Species combination. Only used for a few trips.
units_number	integer		Number of cartons/trays/bags produced for that species, state and grade.
process_event_catch_detail_key	numeric(9,0)	No	System generated unique identifier of the processed_event_catch_detail.
processing_event_key	numeric(9,0)	No	System generated unique identifier of the associated processing_event.
processing_event_catch_key	numeric(9,0)	No	System generated unique identifier of the processing_event_catch.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
created_date	date	No	Date this row was created.

Indexes:
  "pk_y_trw_observer_processed" PRIMARY KEY, btree (trip_number, group_number, species, processed_state)

Table y_trw_observer_station

Comment: Station data from the catch and effort logbook until 1997.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
log_number	integer		Unique number printed on the logbook.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
tow_number	integer	No	Sequential identifier for each tow.
start_date	date		Date at start of the tow.
target_species	character(3)		Species code for the species being targeted.
gear_code	character(5)		Net identifier (BT = bottom trawl, MW = midwater).
headline_height	numeric(4,1)		Vertical opening distance of net in metres.
fishing_on_marks	integer		Code to identify fishing on marks.
fishing_on_marks_lookup_key	numeric(9,0)	No	System generated Lookup key associated with the fishing on marks code.
start_time	integer		Start time (24 hour format).
start_latitude	numeric(5,1)		Start position latitude (format DDMM.m).
start_longitude	numeric(6,1)		Start position longitude (format DDDMM.m).
start_east_west	character(1)		Start position meridian, E or W.
start_headline_depth	integer		Depth to headline at the start of tow in metres.
start_bottom_depth	integer		Depth to seabed at the start of tow in metres.
surface_temperature	double precision		Sea surface temperature (decimal degrees C).
headline_temperature	double precision		Sea temperature at the headline (decimal degrees C).
fishing_speed	numeric(3,1)		Speed of vessel in knots while fishing (trawl speed).
period_not_fishing	integer		Duration between start and end-time when net not fishing (hr and min HHMM).
end_time	integer		End time (24 hour format).
end_latitude	numeric(5,1)		End position latitude (format DDMM.m).
end_longitude	numeric(6,1)		End position longitude (format DDDMM.m).
end_east_west	character(1)		End position meridian, E or W.
end_headline_depth	integer		Depth to headline at the end of tow in metres.
total_surface_greenweight	integer		Total weight of catch when net surfaces (kg).

total_board_greenweight	integer		Weight of catch when net hauled aboard (in kilograms). This will equal total_greenweight_on_surface unless fish are lost from the net.
greenweight_method_code	character(4)		Code to identify method used to determine total greenweight on board.
greenwt_method_code_lookup_key	numeric(9,0)	No	System generated Lookup key associated with the greenweight method code.
fish_loss_code	character(4)		Code to identify the type of fish loss (see logbook instructions).
fish_loss_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the fish loss code.
start_display_latitude	character(9)		Start Latitude formatted for display purposes in format DD:MM.mS.
start_display_longitude	character(10)		Start Longitude formatted for display purposes in format DDD:MM.m[E|W].
end_display_latitude	character(9)		End Latitude formatted for display purposes in format DD:MM.mS.
end_display_longitude	character(10)		End Longitude formatted for display purposes in format DDD:MM.m[E|W].
event_key	numeric(9,0)	No	System generated key to identify the event associated with the lfs trawl event.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
fishing_event_type_key	numeric(9,0)	No	The system generated key associated with the type of fishing event (e.g. Trawl Effort, Surface Lining Effort) based on Method
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date	No	Date this row was created.
path_of_tow	character(3)		Configuration of tow as per logbook instructions.
end_bottom_depth	integer		Depth to seabed at the end of tow in metres.
tow_type	character(1)		Code for tow type, from part one of the fishing path: 1= bottom throughout. 2= midwater at relatively constant depth. 3= midwater in a broad range of depths. 4= mixed bottom & midwater.
tow_type_lookup_key	numeric(9,0)		System generated Lookup key associated with the tow type code.
tow_configuration	character(1)		Code for tow configuration, from part 2 of the fishing path, e.g. A = Straight line, E = Constant depth contour, etc.
tow_configuration_lookup_key	numeric(9,0)		System generated lookup key associated with the Tow Configuration Code.
tow_turns	integer		Number of turns during tow, from part 3 of the fishing path.

Indexes:

"pk_y_trw_observer_station" PRIMARY KEY, btree (trip_number, tow_number)
"obs_observer_station_i1" UNIQUE, btree (trip_number, group_number, tow_number)
"ui_y_trw_observer_station_fek" UNIQUE, btree (fishing_event_key)
"ndx_y_trw_observer_station__s_date" btree (start_date)
"ndx_y_trw_observer_station__target_sp" btree (target_species)
Foreign-key constraints:
"fk_y_trw_observer_station_ref" FOREIGN KEY (trip_number)
REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_y_trw_observer_station_trg_species_ref" FOREIGN KEY (target_species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "y_trw_observer_greenweight" CONSTRAINT "fk_y_trw_observer_gw_ref" FOREIGN KEY (trip_number, tow_number)
REFERENCES y_trw_observer_station(trip_number, tow_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_vme_catch

Comment: Catch data for the Vulnerable Marine Ecosystem Evidence Process form, variable version.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
tow_number	integer	No	Tow or set number that caught the benthic material.
species	character varying(3)	No	Species code as printed on the VME form.
catch_weight_method_code	character varying(1)		Code for the method of obtaining the weight for this taxonomic group: + 1 = Electronic platform scales + 2 = Analogue platform scales + 3 = Salter scales + 4 = Electronic hanging scales + 5 = Other weighing method or estimate of weight.
catch_weight	numeric(11,3)		The weight of material of the specified taxon to two decimal places.
threshold_limit_exceeded	character varying(1)		"Y" if the weight is greater than the threshold weight.
weight_limit_exceeded	character varying(1)		"Y" if the weight is greater than the weight limit.
trip_key	integer		System generated trip key to identify the trip.
event_key	numeric(9,0)		
vme_catch_key	numeric(10,0)	No	
error_highest_level	smallint	No	
error_count	integer	No	
error_text	character varying	No	
created_date	date	No	

Indexes:
"pk_y_vme_catch" PRIMARY KEY, btree (vme_catch_key)
Foreign-key constraints:
"fk_y_vme_catch_y_vme_station" FOREIGN KEY (trip_number, tow_number)
REFERENCES y_vme_station(trip_number, tow_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_vme_station

Comment: Station data for the Vulnerable Marine Ecosystem Evidence Process form, variable version.

Column	Type	Null?	Description
trip_number	integer	No	Trip number allocated by the observer programme.
tow_number	integer	No	Tow or set number that caught the benthic material.
vessel_master	character varying(40)		The name of the vessel master, first name followed by surname.
start_date	date		The date on which the net reaches target depth.
start_time	time without time zone		The time at which net reaches target depth (24 hour format).
start_depth	integer		The groundline depth in metres at which the net reached the target depth.
start_latitude	numeric(6,2)		The vessel latitude at the point at which net reaches target depth.
start_north_south	character(1)		Start latitude hemisphere South (S), as preprinted on the form.
start_longitude	numeric(7,2)		The vessel longitude at the point at which net reaches target depth.
start_east_west	character(1)		Start position meridian, E or W.
end_date	date		The date on which the net leaves target depth.
end_time	time without time zone		The time at which net leaves target depth (24 hour format).
end_depth	integer		The groundline depth in metres at which the net left the target depth.
end_latitude	numeric(6,2)		The vessel latitude at the point at which net leaves target depth.
end_north_south	character(1)		End latitude hemisphere South (S), as preprinted on the form.
end_longitude	numeric(7,2)		The vessel longitude at the point at which net leaves target depth.
end_east_west	character(1)		End position meridian, E or W.
person_in_charge	character varying(40)		The name of the person who signed this form if they are not the vessel master.
form_received_by_vessel_date	date		The date the person in charge received the form (New Zealand Standard Time).
form_received_by_vessel_time	time without time zone		The time the person in charge received the form (New Zealand Standard Time, 24 hour format).
comments	character varying(200)		Comment(s) on the VME form.
decimal_start_latitude	numeric(8,6)		Start latitude in decimal degrees (format DD.dddddd).
decimal_start_longitude	numeric(9,6)		Start longitude in decimal degrees (format DD.dddddd).
decimal_end_latitude	numeric(8,6)		End latitude in decimal degrees (format DD.dddddd).
decimal_end_longitude	numeric(9,6)		End longitude in decimal degrees (format DD.dddddd)
display_start_latitude	character(11)		Start latitude formatted for display purposes in format DD:MM.mS.

display_start_longitude	character(12)		Start longitude formatted for display purposes in format DDD:MM.mS.
display_end_latitude	character(11)		End latitude formatted for display purposes in format DD:MM.mS.
display_end_longitude	character(12)		End longitude formatted for display purposes in format DDD:MM.mS.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
event_key	numeric(10,0)		System generated key of the event for the VME effort.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Separated short error texts for errors for the row.
created_date	date	No	Date when this VME row was created.

Indexes:
  "pk_y_vme_station" PRIMARY KEY, btree (trip_number, tow_number)
  "ui_y_vme_station" UNIQUE CONSTRAINT, btree (event_key)
Foreign-key constraints:
  "fk_y_vme_station_trip_master" FOREIGN KEY (trip_number)
   REFERENCES y_observer_trip_master(trip_number) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
  TABLE "y_vme_catch" CONSTRAINT "fk_y_vme_catch_y_vme_station" FOREIGN KEY (trip_number, tow_number)
   REFERENCES y_vme_station(trip_number, tow_number) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_warp_scarer

Comment: Warp scarer details.

Column	Type	Null?	Description
wpsr_key	numeric(9,0)	No	Warp scarer key.
trip_number	integer	No	Trip number allocated by the observer programme.
equipment_code	character varying(3)	No	Equipment code consisting of the letter W plus a number. Each warp scarer measured during the trip is numbered from 1 onwards.
obs1	character(5)		First initial followed by the first three letters of observers surname involved in measuring the warp scarer.
obs2	character(5)		As for obs 1
measure_date	date		Date that the measurements were made.
measure_reason	character(1)		Code to explain why this measurement was taken: I = Initial measurement for this warp scarer D = description of the warp scarer in a Damaged state R = measurement of the warp scarer after it has been Repaired O = there is some Other reason for this measurement.
reason_lookup_key	numeric(9,0)		System generated lookup key associated with the measure reason.
measure_type	character varying(3)		Full (F) to indicate that this is a full record of measurements or Partial (P) for a Warp Scarer that has a full measurement and then been altered.
measure_type_lookup_key	numeric(9,0)		System generated lookup key associated with the measure type.
based_on	character varying(3)		Where a Partial measurement the Equipment Code (eg W1) of the Warp Scarer that has been altered.
attachment_point	character(1)		The location of the point of attachment: P = Port side warp, S = Starboard side warp, C = Central warp, O = some other point used as a reference point.
attachment_lookup_key	numeric(9,0)		System generated lookup key associated with the attachment point.
mainline_diameter	smallint		The diameter of the mainline used (in millimetres) rounded down to the nearest millimetre.
tow_object	character(1)		Type of towed object:

		A = Chain C = Clip D = Shackle F = inverted funnel or plastic cone L = length of thick line K = knot or loop of thick line B = buoy N = netted buoy H = Hook W = weight Z = no towed object O = other type of towed object
tow_object_lookup_key	numeric(9,0)	System generated lookup key associated with the towed object.
object_weight	numeric(4,2)	Weight of the towed object in kilograms.
connector_type	character(1)	Type of connector eg C = Clip, D = D Shackle, H = Hook.
connector_lookup_key	numeric(9,0)	System generated lookup key associated with the connector type.
connector_number	smallint	The number of connectors holding main line to warp.
streamer_number	smallint	Number of streamers.
streamer_max_gap	numeric(4,2)	The largest gap from one streamer to the next, in metres.
streamer_min_branches	smallint	The minimum number of branches on any streamer on the line.
streamer_max_branches	smallint	The maximum number of branches on any streamer on the line.
streamer_min_length	numeric(4,2)	The minimum length of any branch of any streamer on the line, in metres.
streamer_max_length	numeric(4,2)	The maximum length of any branch of any streamer on the line, in metres.
streamer_min_dia	numeric(4,2)	The minimum diameter of any branch of any streamer on the line, in millimetres.
streamer_max_dia	numeric(4,2)	The maximum diameter of any branch of any streamer on the line, in millimetres.
extent_distance	numeric(3,1)	Estimate of the extent (distance) or coverage of the warp scarer.
material_max_gap	smallint	Maximum gap visible in materials.
mainline_visible_min_lgth	smallint	Minimum length of the main line visible material, in millimetres.
mainline_visible_max_lgth	smallint	Maximum length of the main line visible material, in millimetres.
colours	character varying(8)	All the different streamer colours observed: P pink

		R red C carrot (orange) Y yellow G green B blue W brown F faded colour (any colour) O other
colours_lookup_key	numeric(9,0)	System generated lookup key associated with the colours.
materials	character varying(8)	Code for all the different streamer materials observed: T plastic tubing S plastic strapping O other
materials_lookup_key	numeric(9,0)	System generated lookup key associated with the materials.
comments	character varying(300)	Comments
trip_key	numeric(9,0)	System generated trip key to identify the trip.
error_highest_level	smallint	The highest error level associated with the error messages for the row.
error_count	smallint	The number of error messages for the row.
error_text	character varying(312)	Comma separated short error texts for errors for the row.
created_date	date	Date this record was created.

Indexes:
"pk_y_warp_scarer" PRIMARY KEY, btree (wpsr_key)
Foreign-key constraints:
"fk_y_warp_scarer_ref" FOREIGN KEY (trip_key) REFERENCES y_observer_trip_master(trip_key)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_warp_strike

Comment: Seabird warp-strike observations (trawl) - Fishing event descriptors.

Column	Type	Null?	Description
fishing_event_key	numeric(9,0)	No	System generated key of the fishing event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	Sequential number for each station (tow).
tcepr_number	integer		TCEPR form number for the tow.
tcepr_tow	smallint		Shot number on the TCEPR form.
tow_date	date		Date at start of the tow.
tow_start_time	time without time zone		Start time of the tow.
time_code	character(2)		Time code as defined in the observer catch effort logbook instructions.
time_code_lookup_key	numeric(9,0)		Key to link to lookup table to describe time code used.
meal_plant	character(1)		Meal plant onboard the vessel (Y or N).
meal_plant_on	character(1)		Meal plant running during the tow (Y or N).
percent_observed	smallint		The percentage of pound emptying observed.
comments_tow	character varying(560)		Comment for the tow or relating to a sampling period that was not sampled.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date this record was created.

Indexes:
  "pk_y_warp_strike" PRIMARY KEY, btree (fishing_event_key)
  "ndx_y_warpstrike_trp_stn" UNIQUE, btree (trip_number, station_number)
Check constraints:
  "y_warp_strike_check_meal_plant" CHECK (meal_plant = 'Y'::bpchar OR meal_plant = 'N'::bpchar OR meal_plant = NULL::bpchar)
  "y_warp_strike_check_meal_plant_on" CHECK (meal_plant = 'Y'::bpchar OR meal_plant = 'N'::bpchar OR meal_plant = NULL::bpchar)
Foreign-key constraints:
  "fk_y_warp_strike_ref" FOREIGN KEY (trip_key) REFERENCES y_observer_trip_master(trip_key)
   ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:

TABLE "y_warp_strike_sample" CONSTRAINT "fk_y_warp_strike_sample_ref" FOREIGN KEY (fishing_event_key)
 REFERENCES y_warp_strike(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_warp_strike_capture" CONSTRAINT "fk_y_warpstrike_capture_y_warp_strike" FOREIGN KEY (fishing_event_key)
 REFERENCES y_warp_strike(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_warp_strike_capture

Comment: Numbers of seabirds recovered from the whole tow, only up to trip number 2306.

Column	Type	Null?	Description
bird_capture_key	numeric(9,0)	No	System generated primary key to identify bird capture records.
fishing_event_key	numeric(9,0)	No	System generated key of the fishing event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
recov_from	character(1)		Code for where birds were recovered from, W = Warp, N = Net, M = Mitigation device, U = Unknown.
recov_from_lookup_key	numeric(9,0)	No	Key to link to lookup table to describe recov_from code.
status	character(1)		Code for status: D = dead, I = injured, A = non injured, U = Unknown when no observation was made.
status_lookup_key	numeric(9,0)	No	Key to link to lookup table to describe status code.
size	character(1)		Code for bird size: L = Large, S = Small, N = Not recorded (pre 18/01/2006 forms).
size_lookup_key	numeric(9,0)	No	Key to link to lookup table to describe size code.
bird_count	smallint		Number of birds recovered.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date this record was created.

Indexes:
  "pk_y_warp_strike_capture" PRIMARY KEY, btree (bird_capture_key)
  "ndx_y_warp_strike_capt_stn" btree (fishing_event_key)
Check constraints:
  "y_warp_strike_capture_check_recov" CHECK (recov_from = 'W'::bpchar OR recov_from = 'N'::bpchar OR recov_from = 'M'::bpchar OR recov_from = 'U'::bpchar)
  "y_warp_strike_capture_check_size" CHECK (size = 'L'::bpchar OR size = 'S'::bpchar OR size = 'N'::bpchar)
  "y_warp_strike_capture_check_status" CHECK (status = 'A'::bpchar OR status = 'D'::bpchar OR status = 'I'::bpchar OR status = 'U'::bpchar)
Foreign-key constraints:
  "fk_y_warpstrike_capture_y_warp_strike" FOREIGN KEY (fishing_event_key)
   REFERENCES y_warp_strike(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_warp_strike_device

Comment: Details of mitigation devices or methods used during an observation sampling period.

Column	Type	Null?	Description
warpstrike_device_key	numeric(10,0)	No	System generated key of the warp strike device.
warpstrike_sample_key	numeric(10,0)	No	System generated key of the warp strike sample.
device_type	character varying(3)		Device type code.
device_length	integer		Length parameter of the device.
device_height	integer		Height parameter of the device.
streamers	integer		Number of streamers.
device_complete	character(1)		Device complete flag, Y = Yes, N = No, U = Unknown.
deploy_sides	character(1)		Sides device deployed on, P = Port, S = Starboard, B = Both, N = Neither.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	System generated key of the fishing event.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date this record was created.

Indexes:
  "pk_y_warp_strike_devices" PRIMARY KEY, btree (warpstrike_device_key)
Foreign-key constraints:
  "fk_y_warp_strike_device_md" FOREIGN KEY (device_type)
   REFERENCES y_mitigation_description(device_type) ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_y_warp_strike_device_ref" FOREIGN KEY (warpstrike_sample_key)
   REFERENCES y_warp_strike_sample(warpstrike_sample_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table y_warp_strike_sample

Comment: Fifteen minute seabird warp/mitigation device strike observations and bird abundance data.

Column	Type	Null?	Description
warpstrike_sample_key	numeric(10,0)	No	System generated key of the warp strike sample.
fishing_event_key	numeric(10,0)	No	System generated key of the fishing event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	Sequential number for each station (tow).
sample_number	smallint	No	Sampling period number for the tow.
side_observed	character(1)		Which warp or side was observed during the observation period, P=Port, S=Starboard, C=Central.
side_observed_lookup_key	numeric(9,0)		Key to link to lookup table to describe side_observed code.
warp_or_device_observed	character(2)		Code for trawl warp (TW) or mitigation device (MD) or both (TM) observed during the sampling period.
observed_lookup_key	numeric(9,0)		Key to link to lookup table to describe warp_or_device_observed code.
large_birds	integer		The large bird abundance count just before the sampling period.
small_birds	integer		The small bird abundance count just before the sampling period.
large_range	smallint		Code for range of large bird abundance for sampling period number 0 = 0, 1 = 1-9, 2 = 10-100, 3 = >100.
small_range	smallint		Code for range of small bird abundance for sampling period number 0 = 0, 1 = 1-9, 2 = 10-100, 3 = >100.
time_start	time without time zone		Start time for the sampling period.
time_end	time without time zone		End time for the sampling period.
contacts_large	smallint		Number of large birds coming into heavy contact with the observed trawl warp (or mitigation device) during the sampling period.
contacts_small	smallint		Number of small birds coming into heavy contact with the observed trawl warp (or mitigation device) during the sampling period.
sprags_port	character(1)		Sprags on the port side warp, Y = Yes, N = No, U = Unknown.
sprags_starboard	character(1)		Sprags on the starboard side warp, Y = Yes, N = No, U = Unknown.
grease	character(1)		Grease on warps, P = Port, S = Starboard, B = Both, N = Neither/None.
swell_ht	numeric(3,2)		Swell height (m).

swell_dir	smallint		Swell direction, in 12 point "clock scale". The bow of the vessel is defined as 12, the stern 6 etc.
wind_spd	smallint		Wind speed on the beaufort scale.
wind_spd_lookup_key	numeric(9,0)		System generated lookup key associated with the wind_spd.
wind_dir	smallint		Wind direction, in 12 point "clock scale". The bow of the vessel is defined as 12, the stern 6 etc.
discharge_side	character(1)		Discharge side for offal, P=Port, S=Starboard, B=Both, N=Neither.
discharge_side_lookup_key	numeric(9,0)		System generated lookup key associated with the discharge side.
discharge_rate	character(1)		Rate of offal or discard discharge, 0 = none, 1 = negligible, 2 = intermittent, 3 = continuous.
discharge_rate_lookup_key	numeric(9,0)		System generated lookup key associated with the discharge rate.
discharge_type	character varying(5)		Type of discharges, S = Sump water, M = Minced & macerated, C = Cutter pump, O = Offal meaning heads and guts, D = Discards of whole fish.
discharge_type_lookup_key	numeric(9,0)		System generated lookup key associated with the discharge type.
obs_initials	character(2)		Observers initials.
comments	character varying(600)		Comments for the sampling period.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date this record was created.

Indexes:
  "pk_y_warp_strike_sample" PRIMARY KEY, btree (warpstrike_sample_key)
  "ui_y_warp_strike_sample" UNIQUE, btree (trip_number, station_number, sample_number)
Check constraints:
  "y_warp_strike_sample_check_grease" CHECK (grease = 'P'::bpchar OR grease = 'S'::bpchar OR grease = 'B'::bpchar OR grease = 'N'::bpchar OR grease = NULL::bpchar)
  "y_warp_strike_sample_check_l_range" CHECK (large_range >= 0 AND large_range <= 3)
  "y_warp_strike_sample_check_s_range" CHECK (small_range >= 0 AND small_range <= 3)
  "y_warp_strike_sample_check_sprags_p" CHECK (sprags_port = 'Y'::bpchar OR sprags_port = 'N'::bpchar OR sprags_port = 'U'::bpchar OR sprags_port = NULL::bpchar)
  "y_warp_strike_sample_check_sprags_s" CHECK (sprags_starboard = 'Y'::bpchar OR sprags_starboard = 'N'::bpchar OR sprags_starboard = 'U'::bpchar OR sprags_starboard = NULL::bpchar)
Foreign-key constraints:

"fk_y_warp_strike_sample_ref" FOREIGN KEY (fishing_event_key)
REFERENCES y_warp_strike(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "y_mitigation_event" CONSTRAINT "fk_y_mitigation_event_ref" FOREIGN KEY (warpstrike_sample_key)
REFERENCES y_warp_strike_sample(warpstrike_sample_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_warp_strike_device" CONSTRAINT "fk_y_warp_strike_device_ref" FOREIGN KEY (warpstrike_sample_key)
REFERENCES y_warp_strike_sample(warpstrike_sample_key) ON UPDATE RESTRICT ON DELETE RESTRICT

5.3 Report tables (prefixed 'x')

Table x_area_ref

Comment: A defined area of interest in Fisheries Management e.g. FMA, Statistical Area, QMA.

Column	Type	Null?	Description
location_key	numeric(9,0)	No	System generated key to identify a location
area_code	character varying(7)		Code to identify an area, e.g. AKE - FMA1, SNA1 - Snapper 1 QMA, 001 - Statistical Area 001.
area_name	character varying(80)		The name of the area.
area_type	character(3)		The type of area e.g. FMA, QMA, ET = beyond the EEZ.
species_code	character(3)		The species code related to an area.

Indexes:
"pk_x_area" PRIMARY KEY, btree (location_key)
"ui_x_area_ref" UNIQUE, btree (area_code)
Referenced by:
TABLE "x_event" CONSTRAINT "fk_x_event_end_fma" FOREIGN KEY (end_obs_fma)
REFERENCES x_area_ref(area_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_event" CONSTRAINT "fk_x_event_start_fma" FOREIGN KEY (start_obs_fma)
REFERENCES x_area_ref(area_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_bait_usage

Comment: Profile on the bait strategy used on a range of tuna longline sets

Column	Type	Null?	Description
bait_usage_key	numeric(9,0)	No	System generated unique key to identify the bait_usage.
start_set_num	smallint		Starting set for described bait strategy.
end_set_num	smallint		Final set to which the bait strategy applies.
bait_number	integer		Bait number from the start of the basket, corresponds to snood_no from snoods table.
bait_code	integer		Code to identify type of bait used.
bait_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the bait code.
baskets_descript	character varying(75)		Brief description of the range of baskets to which arrangement applies, if blank applies to all baskets.
fishing_effort_extra_info_key	numeric(9,0)	No	System generated unique key to identify the fishing_effort_extra_info.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this bait_usage was created.
updated_date	date	No	Date when this bait_usage was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
"pk_x_bait_usage" PRIMARY KEY, btree (bait_usage_key)
Foreign-key constraints:
"fk_x_bait_u_x_extra_i_x_fishin" FOREIGN KEY (fishing_effort_extra_info_key)
REFERENCES x_fishing_effort_extra_info(fishing_effort_extra_info_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_bird_baffler

Comment: Bird Baffler details.

Column	Type	Null?	Description
baffler_key	bigint	No	System generated key to identify the bird baffler.
trip_number	integer		Trip number allocated by the observer programme.
obs1	character(5)		First initial followed by the first three letters of observers surname involved in the measurement of the bird baffler.
obs2	character(5)		As for obs 1
equipment_code	character varying(3)		Equipment code consisting of the letter B plus a number. Each device measured during the trip is numbered from 1 onwards.
measure_date	date		Date that the measurements were made.
measure_reason	character(1)		Code to explain why this measurement was taken: I = Initial measurement D = description of the device in a Damaged state R = measurement of the device after it has been Repaired O = some Other reason for this measurement.
measure_type	character(1)		Full (F) to indicate that this is a full record of measurements or Partial (P) for the device that has had a full measurement and has then been altered.
based_on	character varying(3)		Where a Partial measurement the Equipment Code (eg B1) of the bird baffler that has been altered.
method_attach_location	character(1)		Code to indicate how precise the attachment location measurements are: A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates.
method_angle	character(1)		Code to indicate how precise the angle from dead astern measurements are: A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates.
method_inner_dropper	character(1)		Code to indicate how precise the distance to innermost dropper measurements are:

		A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates.
method_outer_dropper	character(1)	Code to indicate how precise the distance to outermost dropper measurements are: A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates
method_spacing	character(1)	Code to indicate how precise the maximum dropper spacing measurements are: A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates
method_line_length	character(1)	Code to indicate how precise the dropper line length measurements are: A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates
method_object_length	character(1)	Code to indicate how precise the dropper object length measurements are: A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates
method_surface	character(1)	Code to indicate how precise the distance between sea surface and bottom of dropper object measurements are: A = Accurately measured. C = Measurements are Compared with a known length. E = measurements are Estimates.
comments	character varying(900)	Bird baffler comments.
measure_type_lookup_key	numeric(9,0)	Look up key for type of measurement record.
reason_lookup_key	numeric(9,0)	System generated lookup key associated with the measure reason.
method_attach_lookup_key	numeric(9,0)	Lookup key for attachment location method of measurement.
method_angle_lookup_key	numeric(9,0)	Look up key for angle from dead astern measurement method.
method_inner_lookup_key	numeric(9,0)	Distance to innermost dropper method of measurement look up key.
method_outer_lookup_key	numeric(9,0)	Distance to outer most dropper method of measurement look up key.
method_spacing_lookup_key	numeric(9,0)	Maximum dropper spacing method of measurement look up key.

method_line_lookup_key	numeric(9,0)	Dropper line length method of measurement look up key.
method_object_lookup_key	numeric(9,0)	Dropper object length method of measurement look up key.
surface_gap_lookup_key	numeric(9,0)	Space between sea and dropper bottom method of measurement look up key.
trip_key	numeric(9,0)	System generated trip key to identify the trip.
error_highest_level	smallint	The highest error level associated with the error messages for the row.
error_count	integer	The number of error messages for the row.
error_text	character varying(512)	Comma separated short error texts for errors for the row.
created_date	date	Date when this row was created.
updated_date	date	Date when this row was last updated.

Indexes:
  "pk_x_bird_baffler" PRIMARY KEY, btree (baffler_key)
  "ndx_x_bbaffler_trip" btree (trip_number)
Foreign-key constraints:
  "fk_x_bird_baffler_ref" FOREIGN KEY (trip_key) REFERENCES x_trip(trip_key)
   ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
  TABLE "x_bird_baffler_boom" CONSTRAINT "fk_x_bird_b_reference_x_bb" FOREIGN KEY (baffler_key)
   REFERENCES x_bird_baffler(baffler_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_bird_baffler_boom

Comment: Bird baffler boom details, up to 4 positions from stern quarter of a vessel.

Column	Type	Null?	Description
baffler_boom_key	bigint	No	System generated key to identify the bird baffler boom.
baffler_key	bigint	No	System generated key to identify the bird baffler.
trip_number	integer	No	Trip number allocated by the observer programme.
equipment_code	character(3)		Letter B plus a number, each baffler measure during this trip numbered from 1 upwards.
boom_position	smallint	No	Boom position as: 1 = Port side, 2 = Port aft, 3 = Starboard side, 4 = Starboard aft.
boom_present	character(1)		Present or Absent. Boom details only completed if indicated that this boom was present.
boom_location	numeric(4,2)		Distance to the appropriate reference point. (Stern corner of vessel) Recorded in metres, rounded to the nearest 0.1m
boom_angle	smallint		Estimate of the angle of the boom from dead astern.
inner_dropper	numeric(3,2)		Distance from the edge of the vessel to the innermost dropper.
outer_dropper	numeric(4,2)		Total distance from the edge of the vessel to the outermost dropper.
droppers_number	smallint		Number of droppers attached to the boom.
webbing_type	character(1)		Webbing Type connecting the droppers: R = Rigid (for example lengths of pipe) F = Flexible (for example, rope) N = None (absent).
max_spacing	numeric(3,2)		Maximum dropper spacing (m).
line_length	numeric(4,2)		Average dropper line length in metres rounded to the nearest 0.1m.
object_length	numeric(3,2)		Average dropper object length (m).
surface_gap	numeric(4,2)		Estimate of the average gap between the bottom of a dropper object and the sea surface.

material_types	character varying(10)		Dropper Material code or codes of all materials used to form the dropper lines and dropper object. B = buoy, F = inverted funnel or plastic cone, H = plastic hosing, S = plastic strapping, L = length of line, R = plastic rod, M = length of metal, T = plastic tubing, W = weight, Z = No separate object, P = poly- pipe, O = other (describe in Additional Comments).
material_colours	character varying(10)		Colours on dropper, (except the main line). B = blue P = pink R = red C = carrot (orange) Y = yellow G = green F = faded colour (any) W = brown O = other (describe in Additional Comments).
boom_lookup_key	numeric(9,0)	No	Bird baffler boom position look up key.
material_lookup_key	numeric(9,0)		Dropper material look up key.
colours_lookup_key	numeric(9,0)		Dropper material colour look up key.
webbing_lookup_key	numeric(9,0)		Dropper webbing type look up key.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date when this row was created.

updated_date date Date when this row was last updated.
Indexes:
"pk_x_bird_baffler_boom" PRIMARY KEY, btree (baffler_boom_key)
"indx_xbaffler_boom_key" btree (baffler_key)
"indx_xbaffler_boom_trip" btree (trip_number)
Foreign-key constraints:
"fk_x_bird_b_reference_x_bb" FOREIGN KEY (baffler_key)
REFERENCES x_bird_baffler(baffler_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_bll_gear

Comment: Bottom long line gear form, version 1, June 2019.

Column	Type	Null?	Description
bll_gear_key	numeric(9,0)	No	System generated unique key for BLL gear. Generated from trip_key and gear_code numeric identifier.
trip_number	integer	No	Trip number allocated by the observer programme.
observer_code	character(4)		Observer code, typically first name initial followed by the first three letters of observers surname.
gear_code	character(3)	No	Code used as unique identifier for a single longline configuration: BL = Bottom longline DL = Drop or Dahn line HL = Handline TL = Trot line
mainline_material	character(1)		Material used in mainline construction: M = Monofilament I = Integrated weight line (IWL) R = Rope O = Other. Refer to lookup key.
mainline_material_lookup_key	numeric(9,0)		Lookup code key for mainline material. Refer to x_lookup_code (lookup_code_type_key=174).
mainline_diameter	numeric(3,1)		Diameter of the mainline/backbone (mm).
integrated_weight_line	integer		Weight per metre of integrated weight line (g/m).
mainline_weight	integer		Average weight of the weights attached to the mainline/backbone (kg).
max_float_diameter	integer		Diameter of the largest float attached to the main line (cm).
drop_line_length	integer		Length of the line between the surface float and the anchor (m).
hooks_number_ssf	integer		Total number of hooks between surface float and anchor.
distance_ss_floats	integer		Average distance between subsurface floats (m).
weight_under_ssf	integer		Average weight of the weights attached to any subsurface floats (kg).
weight_material_ssf	character(1)		Material for weights attached to subsurface floats:

		M = Metal N = Non-metal Refer to lookup key.
weight_material_ssf_lookup_key	numeric(9,0)	Lookup code key for subsurface float weight material. Refer to x_lookup_code (lookup_code_type_key=175).
avg_distance_weights	integer	Average distance between weights along the mainline (m).
weight_material	character(1)	Material for mainline weights: M = Metal N = Non-metal Refer to lookup key.
weight_material_lookup_key	numeric(9,0)	Lookup code key for weight material. Refer to x_lookup_code (lookup_code_type_key=176).
hooks_between_weights	integer	Average number of hooks between weights.
dropper_length	integer	Average length of the dropper line attaching weights to the backbone (m).
branchline_material	character(1)	Material used for branchlines/snoods: M = Monofilament R = Rope O = Other Refer to lookup key.
branchline_material_lookup_key	numeric(9,0)	Lookup code key for branchline/snood material. Refer to x_lookup_code (lookup_code_type_key=177).
branchline_snood_length	integer	Average length of the branchlines/snoods (cm).
branchline_snood_spacing	integer	Average spacing between snoods (m).
hook_type	character(1)	Hook type used by the vessel: C = Circle J = J hook O Other Refer to lookup key.
hook_type_lookup_key	numeric(9,0)	Lookup code key for hook type. Refer to x_lookup_code (lookup_code_type_key=178).
hook_size	character varying(4)	Hook size written on the packaging.
bait_method	character(1)	Method of baiting: M = Manual

			A = Automatic Refer to lookup key.
bait_method_lookup_key	numeric(9,0)		Lookup code key for bait method. Refer to x_lookup_code (lookup_code_type_key=179).
comments	character varying		Observer comment on longline gear configuration.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this row was created.
updated_date	date	No	
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Colon separated short error texts for errors in this row.

Indexes:
"pk_x_bll_gear" PRIMARY KEY, btree (bll_gear_key)
"ui_x_bll_gear" UNIQUE CONSTRAINT, btree (trip_number, gear_code)
Foreign-key constraints:
"fk_x_bll_gear_x_trip" FOREIGN KEY (trip_key) REFERENCES x_trip(trip_key)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_bottom_lining_effort

Comment: Specific Bottom Lining related fishing effort information.

Column	Type	Null?	Description
fishing_event_key	numeric(9,0)	No	System generated key of the fishing event for the bottom lining effort.
start_setting_rec_by_obs	character(1)		Whether setting start details were recorded by: Y = observer N = vessel
end_setting_rec_by_obs	character(1)		Whether setting end details were recorded by: Y = observer N = vessel
entire_setting_observed_yn	character(1)		Entire set observed during setting (Y/N).
gear_code	character(3)		Gear code for the line set. Refers to code on BLL Gear form.
bll_gear_key	integer		System generated unique key for BLL gear. Refer to table y_bll_gear.
hooks_number	integer		The number of hooks set.
setting_period_1_start_time	time(6) without time zone		Start time of observation period 1 (NZST 24hr).
setting_period_1_end_time	time(6) without time zone		End time of observation period 1 (NZST 24hr).
setting_period_1_hooks_observed	integer		Total number of hooks observed during period 1.
setting_period_1_hooks_baited_perc	integer		Percentage of hooks baited from a sample of 100 hooks observed during period 1.
setting_period_2_start_time	time(6) without time zone		Start time of observation period 2 (NZST 24hr).
setting_period_2_end_time	time(6) without time zone		End time of observation period 2 (NZST 24hr).
setting_period_2_hooks_observed	integer		Total number of hooks observed during period 2.
setting_period_2_hooks_baited_perc	integer		Percentage of hooks baited from a sample of 100 hooks observed during period 2.
setting_period_3_start_time	time(6) without time zone		Start time of observation period 3 (NZST 24hr).
setting_period_3_end_time	time(6) without time zone		End time of observation period 3 (NZST 24hr).
setting_period_3_hooks_observed	integer		Total number of hooks observed during period 3.
setting_period_3_hooks_baited_perc	integer		Percentage of hooks baited from a sample of 100 hooks observed during period 3.
strategy	character(2)		Two-part code for fishing strategy during setting.

strategy_part1	character(1)	Fishing strategy employed during setting (Part 1 - personnel).
strategy_part1_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=184)
strategy_part2	character(1)	Fishing strategy employed during setting (Part 2 - attribute).
strategy_part2_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=185)
gear_discard_yn	character(1)	Gear was discarded during setting (Y/N).
line_setting_height	numeric(3,1)	Line setting height (m).
line_length	integer	Length of line (m) while setting.
setting_path	character(2)	Two-part code for path of vessel while setting. Code detail on back of setting form.
setting_path_part1	character(1)	Shape of the path followed by the vessel during setting.
setting_path_part1_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=186).
setting_path_part2	integer	The number of turns made by the vessel along the setting path.
min_hook_depth	integer	Minimum hook distance from seabed (m) during setting.
max_hook_depth	integer	Maximum hook distance from seabed (m) during setting.
dist_stern_to_bait_min	integer	Minimum distance from stern to bait entry point (m) during setting.
dist_stern_to_bait_max	integer	Maximum distance from stern to bait entry point (m) during setting.
dist_bait_to_tori	integer	Lateral distance from bait entry point to tori line (m) during setting.
bait1_species	character(3)	Species code for the principle bait species used.
bait1_composition	integer	Percentage of total baited hooks having bait 1 species during setting.
bait1_state	character(1)	State of bait 1 species during setting: F = Frozen T = Thawed S = Semi-thawed Refer to lookup_key
bait1_state_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=187).
bait2_species	character(3)	Species code for the 2nd most relevant bait species used.
bait2_composition	integer	Percentage of total baited hooks having bait 2 species during setting.
bait2_state	character(1)	State of bait 2 species during setting: F = Frozen T = Thawed S = Semi-thawed Refer to lookup_key.
bait2_state_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=187).

bait3_species	character(3)	3-char species code for bait 3 species during setting.
bait3_composition	integer	Percentage of total baited hooks having bait 3 species during setting.
bait3_state	character(1)	State of bait 3 species during setting: F = Frozen T = Thawed S = Semi-thawed Refer to lookup_key.
bait3_state_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=187).
bait_prop_wash	character(1)	Whether bait lands inside vessel prop wash during setting (Y/N/U).
setting_acoustic_bird_deterrent	character(1)	Whether acoustic bird deterrents were used at any time during the set (Y/N/U).
setting_laser_deterrent	character(1)	Whether a Laser deterrent was used at any time during the set (Y/N/U).
setting_deck_light	character(1)	Whether there was unnecessary deck lighting while setting (Y/N/U).
setting_other_mitigation_yn	character(1)	Whether there were any other mitigation devices or strategies used during setting (Y/N).
discards_during_setting	character(1)	Any offal bait or whole fish discarded during setting. Refer to lookup_key.
discards_during_setting_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=188)
tori_used	character(1)	Whether a tori line was deployed during setting (Y/N/U).
port_tori_gear_code	character(2)	Gear code of tori line attached on port side of vessel during setting.
port_tori_problem_code	character varying(3)	Problem code for port side tori line. Refer to lookup_key.
port_tori_problem_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=189)
centre_tori_gear_code	character(2)	Gear code of tori line attached on centre of vessel during setting.
centre_tori_problem_code	character varying(3)	Problem code for centre tori line. Refer to lookup_key.
centre_tori_problem_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=189)
stbd_tori_gear_code	character(2)	Gear code of tori line attached on starboard side of vessel during setting.
stbd_tori_problem_code	character varying(3)	Problem code for starboard side tori line. Refer to lookup_key.
stbd_tori_problem_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=189)
end_hauled_first	integer	Which end of line hauled first: 0 = Unknown 1 = End set first 2 = End set last
start_haul_rec_by_obs	character(1)	Whether hauling start details were recorded by: Y = observer N = vessel.

end_haul_rec_by_obs	character(1)	Whether hauling end details were recorded by: Y = observer N = vessel.
entire_haul_observed_yn	character(1)	Whether the entire haul was observed (Y/N).
haul_period_1_start_time	time(6) without time zone	Start time of observation period 1 (NZST 24hr).
haul_period_1_end_time	time(6) without time zone	End time of observation period 1 (NZST 24hr).
haul_period_1_hooks_observed	integer	Number of hooks observed hauled in period 1.
haul_period_2_start_time	time(6) without time zone	Start time of observation period 2 (NZST 24hr).
haul_period_2_end_time	time(6) without time zone	End time of observation period 2 (NZST 24hr).
haul_period_2_hooks_observed	integer	Number of hooks observed hauled in period 2.
haul_period_3_start_time	time(6) without time zone	Start time of observation period 3 (NZST 24hr).
haul_period_3_end_time	time(6) without time zone	End time of observation period 3 (NZST 24hr).
haul_period_3_hooks_observed	integer	Number of hooks observed hauled in period 3.
haul_period_4_start_time	time(6) without time zone	Start time of observation period 4 (NZST 24hr).
haul_period_4_end_time	time(6) without time zone	End time of observation period 4 (NZST 24hr).
haul_period_4_hooks_observed	integer	Number of hooks observed hauled in period 4.
haul_period_5_start_time	time(6) without time zone	Start time of observation period 5 (NZST 24hr).
haul_period_5_end_time	time(6) without time zone	End time of observation period 5 (NZST 24hr).
haul_period_5_hooks_observed	integer	Number of hooks observed hauled in period 5.
haul_period_6_start_time	time(6) without time zone	Start time of observation period 6 (NZST 24hr).
haul_period_6_end_time	time(6) without time zone	End time of observation period 6 (NZST 24hr).
haul_period_6_hooks_observed	integer	Number of hooks observed hauled in period 6.
hooks_lost_number	integer	The number of hooks lost.
fishing_gear_discard_yn	character(1)	Whether fishing gear was discarded during haul (Y/N).
haul_location	character(1)	Location on vessel where hauling took place: P = Port S = Starboard S = Stern
port_offal_discard	character(1)	Code for offal bait and whole fish discarding on port/starboard/stern during hauling. Refer to lookup_key.
port_offal_discard_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=190)
port_bait_discard	character(1)	Code for bait discarding on port side during hauling. Refer to lookup_key
port_bait_discard_lookup_key	integer	Refer to x_lookup_code (lookup_code_type_key=190)

port_whole_fish_discard	character(1)		Code for whole fish discarding on port side during hauling.Refer to lookup_key
port_whole_fish_discard_lookup_key	integer		Refer to x_lookup_code (lookup_code_type_key=190)
stbd_offal_discard	character(1)		Code for offal discarding on starboard side during hauling.Refer to lookup_key
stbd_offal_discard_lookup_key	integer		Refer to x_lookup_code (lookup_code_type_key=190)
stbd_bait_discard	character(1)		Code for bait discarding on starboard side during hauling.Refer to lookup_key
stbd_bait_discard_lookup_key	integer		Refer to x_lookup_code (lookup_code_type_key=190)
stbd_whole_fish_discard	character(1)		Code for whole fish discarding on starboard side during hauling.Refer to lookup_key
stbd_whole_fish_discard_lookup_key	integer		Refer to x_lookup_code (lookup_code_type_key=190)
stern_offal_discard	character(1)		Code for offal discarding aft over stern during hauling.Refer to lookup_key
stern_offal_discard_lookup_key	integer		Refer to x_lookup_code (lookup_code_type_key=190)
stern_bait_discard	character(1)		Code for bait discarding aft over stern during hauling.Refer to lookup_key
stern_bait_discard_lookup_key	integer		Refer to x_lookup_code (lookup_code_type_key=190)
stern_whole_fish_discard	character(1)		Code for whole fish discarding aft over stern during hauling.Refer to lookup_key
stern_whole_fish_discard_lookup_key	integer		Refer to x_lookup_code (lookup_code_type_key=190)
water_deterrent_used_yn	character(1)		Whether water deterrents were used as a mitigation strategy for protected species captures during hauling(Y/N).
haul_acoustic_deterrent_used_yn	character(1)		Whether acoustic bird deterrents were used during hauling as a mitigation strategy for protected species captures (Y/N).
bird_exclusion_used_yn	character(1)		Whether bird exclusion devices were used as a mitigation strategy for protected species captures during hauling (Y/N).
haul_other_mitigation_used_yn	character(1)		Whether any other mitigation devices were used during hauling (Y/N).
predation_evidence_yn	character(1)		Whether any evidence of marine mammal predation was observed during hauling (Y/N).
number_of_fish_predated	integer		Number of fish predated by marine mammals as observer during hauling.
catch_assessment_code	character(4)		Code to identify the catch assessment for the degree of observation by the observer.
catch_assess_code_lookup_key	numeric(9,0)	No	System generated Lookup key associated with the catch assessment code.
hooks_observed	integer		The number of hooks observed.
hooks_baited_percentage	numeric(7,3)		The percentage of hooks that were baited.

length_frequency_taken_yn	character(1)		Whether Length Frequency was done on fish from this set? Y = Yes, N = No.
topography_code	integer		Numeric code to describe the bottom contour.
topography_code_lookup_key		numeric(9,0)	System generated lookup key associated with the topography_code.
observer_code_setting	character(4)		Observer code as recorded for the setting event.
observer_code_hauling	character(4)		Observer code as recorded for the hauling event
setting_comments	character varying(512)		Observer comments on line setting event.
haul_comments	character varying(512)		Observer comments on line hauling event.
catch_comments	character varying(512)		Observer comments during the catch event.
comments	character varying(512)		Comments about the Bottom Longline set.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this bottom_lining_effort was created.
updated_date	date	No	Date when this bottom_lining_effort was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_x_bottom_lining_effort" PRIMARY KEY, btree (fishing_event_key)
Foreign-key constraints:
  "fk_x_bottom_longline_fishing_event" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_bycatch_incident

Comment: Details for stations with non-fish bycatch including position.

Column	Type	Null?	Description
bycatch_incident_key	numeric(9,0)	No	System generated unique key to identify the associated bycatch_incident.
caught_time	integer	No	Time caught if known 24 hour format, NZST.
gear_depth	integer		Depth of gear in metres.
wind_speed_knots	integer		Wind speed in knots.
wind_direction	integer		Wind direction in degrees 0 to 359
sea_state_beaufort	smallint		Sea state coded on the Beaufort scale.
cloud_cover_num	smallint		Code to identify cloud cover between 0 (clear) and 8 (full cover).
offal_discard_code	character varying(4)		Code identifying type of offal discard.
offal_discard_lookup_key	numeric(9,0)	No	System generated lookup key associated with the offal discard code.
tori_pole_used_yn	character(1)		Whether a tori pole was used (Yes/ No)
bird_device_yn	character(1)		Whether a bird scaring device was used.
gear_event_yn	character(1)		Whether an event that affected the chance of catching a non-fish species took place. (Yes/ No).
wingspread	integer		Distance between the wings of the net in metres, recorded on the 1995 version of Non-fish Bycatch Form.
station_comments	character varying(540)		Comments about the non fish bycatch station.
bird_device_comments	character varying(64)		Device comments.
trip_number	integer		Trip number allocated by the observer programme.
station_number	integer		Sequential number for each station (tow).
event_key	numeric(9,0)	No	System Generated Key of the associated fishing event for the bycatch incident.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this bycatch_incident was created.
updated_date	date	No	Date when this bycatch incident was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:

"pk_x_bycatch_incident" PRIMARY KEY, btree (bycatch_incident_key)
Foreign-key constraints:
"fk_x_bycatch_x_event" FOREIGN KEY (event_key) REFERENCES x_event(event_key)
ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "x_bycatch_incident_catch" CONSTRAINT "fk_x_bycatch_incident_catch_x_bycatch_incident" FOREIGN KEY (bycatch_incident_key)
REFERENCES x_bycatch_incident(bycatch_incident_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_bycatch_incident_catch

Comment: Catch and biological details of non-fish bycatch.

Column	Type	Null?	Description
bycatch_incident_catch_key	numeric(9,0)	No	System generated unique key to identify the associated bycatch_incident_catch, ie bycatch incident interaction key.
interaction_number	integer	No	Sequential number throughout the trip and across voyages that corresponds with the event. Column name previously specimen_number for NFBC.
observation_date	date		The date of the first observation of the capture (New Zealand Standard Time). Column name previously s_date for NFBC defined as Start date of tow or set.
observation_time	integer		The time of the first observation of the capture (New Zealand Standard Time). Column name previously caught_time for NFBC.
observer_code	character(5)		4 character unique observer code, usually the first initial followed by the first 3 letters of observers surname.
on_duty	character(1)		If observer was on duty when the interaction occurred (Y/N).
witnessed	character(1)		If observer witnessed the interaction (Y/N).
animal_seen	character(1)		If the observer has seen the animal at any point of the interaction (Y/N).
observer_species	character(3)	No	Species code identified by observer.
species	character(3)		Species Code as a result of positive identification e.g. after post mortem.
species_id_method	character(1)		Method used to verify species post-mortem. From z_nfb_autopsy.autopsy_type. A=Autopsy, P=Photo, p=Photo but observer did not record photo taken. Added 30th April 2015.
end_status	character varying(4)		Code to indicate what happened to the animal at the end of the incident. Column name previously marked_code for NFBC defined as Whether the specimen was retained or tagged and returned.
end_status_lookup_key	numeric(9,0)	No	System generated lookup key associated with the end status.
life_status	integer	No	Life status when first sighted: 1 = Alive 2 = Dead (Showing no signs of life) 4 = Decomposing. Column previously alive_code for NFBC. Had an additional value 3=killed .

life_status_lookup_key	numeric(9,0)	No	System generated lookup key associated with the life status.
interaction_type	character(1)		Code for the type of interation: F = Caught in the fishing gear M = Caught in seabird mitigation device L = Deck impact/deck landing B = Brought on board R = Caught in recreational gear O = Other U = Unknown.
interaction_type_lookup_key	numeric(9,0)		System generated lookup key associated with the interaction type.
capture_location	character(2)		Code for the capture location (note that some codes are method specific). Previously capture_method for NFBC.
capture_location_lookup_key	numeric(9,0)		System generated lookup key associated with the capture location.
net_caught_in	character(1)		Code for the net that this specimen was caught in, for Scampi trawling. P=Port, S=Starboard, C=Central.
body_part	character(1)		Code for part of the body was caught: E = Entire body caught W = Caught by wing F = Caught by flipper/feet H = Caught by head M = Caught by mouth U = Unknown.
body_part_lookup_key	numeric(9,0)		System generated lookup key associated with the body part.
injury_status	character varying(5)		Injury status of the animal.Column name previously injuries for NFBC.
injury_status_lookup_key	numeric(9,0)		System generated lookup key associated with the injury status.
samples_taken	character varying(5)		Codes for samples taken, as single letter codes.
samples_lookup_key	numeric(9,0)		System generated lookup key associated with the samples_taken.
whole_kept_yn	character(1)		Whether the whole specimen was kept (0 = No, 1 = Yes).
length_cm	integer		Length for animals that are captured where measuring is part of the sampling protocol - for PSI data. Previously for NFBC data - Standard length for seals, Fork length for dolphins.
measure_method	character(1)		Measurement method used: A = Actual length

			E = Estimated length
observer_sex_code	integer		Observer determined code to Identify the sex of a fish e.g. 1=male, 2=female, 3=unknown (unable to determine), 4=Did not attempt to sex. Column previously included 0=Unsexed.
observer_sex_lookup_key	numeric(9,0)	No	System generated lookup key associated with the observer sex code.
sex_code	integer		Code to Identify the sex of a fish e.g. 1=Male, 2=Female, 3=Unknown (unable to determine), 4=Did not attempt to sex. Column previously included 0=Unsexed. Data e.g. from post mortem.
sex_lookup_key	numeric(9,0)	No	System generated lookup key associated with the sex_code.
csp_tag_number	integer		CSP tag number the observer attaches if they tag a dead animal before returning it to the sea or before packaging it for autopsy (post-mortem tag).
tag_capture	character varying(16)		Tag number if the animal has a pre-existing tag on it.
tag_id	character varying(32)		Tag or band number existing on specimen, or tag number that the observer attached, from NFBC form(s).
operating_within_plans	character(1)		Operating in accordance with both the Protected Species Risk Management Plan (PSRMP) and Vessel Management Plan (VMP). (Y/N).
image_filename	character varying(256)		Image filenames. Column previously image for NFBC -defined as Flag to record that a photograph was taken of the bycatch.
age_code	character varying(7)		Maturity for seabirds A=adult, AB=adult breeder, AN=adult nonbreeder, SA=subadult, I=immature, J=juvenile. Age mammals, estimated e.g. growth increments in years. Data e.g. from post mortem.
age_code_lookup_key	numeric(9,0)	No	System generated Lookup key associated with the age code.
actual_age_code	character varying(7)		Actual age for marine mammals.
girth	integer		Girth (mm) at posterior margin of foreflippers.
blubber_mm	integer		Blubber thickness in millimetres.
head_yn	character(1)		Whether the head was kept (0 = No, 1 = Yes).
leg_yn	character(1)		Whether the leg was kept (0 = No, 1 = Yes).
ovary_yn	character(1)		Whether an ovary sample was taken (0 = No, 1 = Yes).
stomach_yn	character(1)		Whether a stomach sample was taken (0 = No, 1 = Yes).
teeth_yn	character(1)		Whether teeth were collected (0 = No, 1 = Yes).
skin_yn	character(1)		Whether a skin sample was taken (0 = No, 1 = Yes).
blubber_yn	character(1)		Whether a blubber sample was taken (0 = No, 1 = Yes).
muscle_yn	character(1)		Whether a muscle sample was taken (0 = No, 1 = Yes).

other_sample_yn	character(1)		Whether another sample was taken (0 = No, 1 = Yes), details held in comments.
observed_yn	character(1)		Whether observed caught species during fishing around vessel, (0 = No, 1 = Yes).
seen_number	integer		Number of species seen if observed during tow/set, recorded once against first specimen recorded.
comments	character varying		Additional comments about the interaction. Column previously Remarks for NFBC.
trip_number	integer		Trip number allocated by the observer programme.
station_number	integer		Sequential identifier for each station (tow or set).
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated key to identify the event.
fishing_event_key	numeric(9,0)		Fishing event key derived from the trip key and station number.
bycatch_incident_key	numeric(9,0)	No	System generated key to identify the event associated with the fishing event.
created_date	date	No	Date this row was created.
updated_date	date	No	Date when this row was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Colon separated short error texts for errors for the row.

Indexes:
"pk_x_bycatch_incident_catch" PRIMARY KEY, btree (bycatch_incident_catch_key)
Foreign-key constraints:
"fk_x_bycatch_incident_catch_x_bycatch_incident" FOREIGN KEY (bycatch_incident_key)
REFERENCES x_bycatch_incident(bycatch_incident_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_conversion_factor

Comment: Scientific Observer Programme conversion factor data.

Column	Type	Null?	Description
conversion_factor_key	numeric(9,0)	No	System generated unique key to identify the conversion factor.
species	character(3)		Species Code for the species tested.
processed_state_code	character varying(3)		Code to identify the state to which the fish has been processed to.
processed_state_code_lookup	integer		System generated Lookup key associated with processed state code.
proc_state_original_code	character varying(3)		Original processed state as stored in the conversion_factor table.
min_length	numeric(5,1)		Minimum length of fish in sample in centimetres.
max_length	numeric(5,1)		Maximum length of fish in sample in centimetres.
min_tail_cut	numeric(4,1)		Minimum tail cut of fish in the sample (cm).
mean_tail_cut	numeric(4,1)		Median tail cut from what appears to be the average 2 or 3 tail cuts of fish in the sample (mm).
max_tail_cut	numeric(4,1)		Maximum tail cut of fish in the sample (cm).
number_of_fish	integer		Number of fish in this test.
greenweight	numeric(11,3)		Greenweight of the fish used to calculate the conversion factor in kilograms.
stomach_gonad_weight	numeric(11,3)		The weight of stomach and gonads if significant (kg).
processed_units_number	integer		Number of processed units in the sample.
non_compliant_cuts_total	integer		Total number of fish with non-compliant cuts.
non_compliant_undercuts	integer		Number of fish with non-compliant undercuts.
non_compliant_overcuts	integer		Number of fish with non-compliant overcuts.
non_compliant_head_cuts	integer		Number of fish with non-compliant head cuts.
non_compliant_tail_cuts	integer		Number of fish with non-compliant tail cuts.
non_compliant_head_tail_cuts	integer		Number of fish with non-compliant head and tail cuts.
post_machine_weight	numeric(11,3)		Weight post machine - Baader/ Trio machine in kilograms.
processed_weight	numeric(11,3)		Weight (kg) of the fish after processing.
trimming_weight	numeric(11,3)		Trimming weight in kilograms.
processing_equipment_code	integer		Code to identify the processing equipment used: 1 hand (cut with knife), 2 machine (see machine_type).
process_equipment_lookup_key	numeric(9,0)	No	System generated lookup key associated with the processing equipment code.

machine_type_name	character varying(50)		Brand name of heading & gutting or filleting machine used.
conversion_factor	numeric(7,4)		Calculated conversion factor as a result of calculation greenweight/ processed weight.
scales_used_gw_code	character varying(4)		Code to identify the type of scales used for green weight, Values: 1 = electronic, 2 = flatbed, 3 = hanging, 4 = other.
scales_used_gw_lookup_key	numeric(9,0)	No	System generated lookup key associated with the greenweight scales used code.
scales_used_pw_code	character varying(4)		Code to identify the type of scales used for processed weight , Values: 1 = electronic, 2 = flatbed, 3 = hanging, 4 = other.
scales_used_pw_lookup_key	numeric(9,0)	No	System generated lookup key associated with the processed weight scales used code.
valid_test_yn	character(1)		Whether the testing is considered valid (Yes or No).
test_type	character varying(2)		Type of test - R Random or NR Non Random.
test_type_lookup_key	numeric(9,0)	No	System generated lookup key associated with the test type.
sex_sampled	integer		Sex where single fish sampled e.g. tuna, 1 male, 2 female, 3 unsexed.
sex_sampled_lookup_key	numeric(9,0)	No	System generated lookup key associated with the sex sampled code.
greenweight_calc_method_code	character varying(4)		Code to identify the method used to establish greenweight (see logbook instructions).
greenwt_calc_method_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Greenweight Calc Method Code.
conversion_factor_comment_key	numeric(9,0)	No	System generated key associated with the conversion factor comment.
average_weight	numeric(11,3)		Average weight of fish in sample in kilograms.
conversion_factor_comment_yn	character(1)		Whether a comment is present for the Conversion Factor (Y/N)
number_of_tows	integer		The number of tows included in the CF test (Surimi).
tow_number_to	integer		The tow number up to, that is included when the data is for a group of tows (Surimi).
fishing_event_key	numeric(9,0)	No	System generated key of the fishing event for the conversion factor data.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date when this row was created.
updated_date	date	No	Date when this row was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:

"pk_x_conversion_factor" PRIMARY KEY, btree (conversion_factor_key)
Referenced by:
TABLE "x_conversion_factor_comment" CONSTRAINT "fk_x_conversion_factor_comment_x_cf" FOREIGN KEY (conversion_factor_key)
REFERENCES x_conversion_factor(conversion_factor_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_conversion_factor_comment

Comment: Scientific Observer Programme conversion factor form comments.

Column	Type	Null?	Description
conversion_factor_comment_key	numeric(9,0)	No	System generated key associated with the conversion factor comment.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this conversion factor comment was created.
updated_date	date	No	Date when this conversion factor comment was last updated.
conversion_factor_key	numeric(9,0)	No	System generated unique key to identify the conversion factor.
fishing_event_key	numeric(9,0)	No	System generated key of the fishing event for the conversion factor.
conversion_factor_comment	character varying(3000)		Comment text associated with the conversion factor.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_x_conversion_factor_comment" PRIMARY KEY, btree (conversion_factor_comment_key)
Foreign-key constraints:
  "fk_x_conversion_factor_comment_x_cf" FOREIGN KEY (conversion_factor_key)
   REFERENCES x_conversion_factor(conversion_factor_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_date_dim

Comment: Links each date to the associated day of the week, day of the year, week number, month, calendar year, ministry fishing year.

Column	Type	Null?	Description
check_date	date	No	Date which is being defined.
day_of_week_num	smallint	No	The day of the week (1 = Monday, 7 = Sunday).
week_of_year_num	smallint	No	Number of the week in the calendar year.
month_num	smallint	No	Number of the month in the year (e.g. January =1, December = 12).
day_of_week_name	character varying(10)	No	The name of the day of the week for the date e.g. Sunday, Monday.
month_name	character varying(10)	No	The name of the month for the date e.g. January, July..
calendar_year	smallint	No	The calendar year associated with the date.
display_fishyear	character varying(8)	No	The Fishing Year in display format eg. 2002/03
year_month_num	integer	No	Year and month combined as a number. eg. Jan 2008 = 200801. Used for catalog summaries for marlin.

Indexes:
"pk_x_date_dim" PRIMARY KEY, btree (check_date)

Table x_event

Comment: An fishing related event of interest to the Scientific Observer Program e.g Fishing, Processing of Catch.

Column	Type	Null?	Description
event_key	numeric(10,0)	No	System generated unique key to identify the event.
event_start_date	date		The start date (with time excluded) for the event, usage varies dependent upon the type of event.
event_end_date	date		The end date (with time excluded) for the event where applicable, usage varies dependent upon the type of event
event_start_time	time without time zone		Start time of the event (in hh:mm:ss format).
event_end_time	time without time zone		End time of the event (in hh:mm:ss format).
fishing_year	character(7)		Fishing year in YYYY/YY format.
start_latitude	numeric(9,6)		Start position latitude in decimal degrees (format DD.dddddd).
start_longitude	numeric(9,6)		Start position longitude in decimal degrees east of Greenwich (format DDD.dddddd).
end_latitude	numeric(9,6)		End position latitude in decimal degrees (format DD.dddddd).
end_longitude	numeric(9,6)		End position longitude in decimal degrees east of Greenwich (format DDD.dddddd).
display_start_latitude	character varying(16)		Start Latitude in degrees and minutes formatted for display purposes in format DD:MM.m S, with S for South.
display_start_longitude	character varying(16)		Start Longitude in degrees and minutes formatted for display purposes in format DDD:MM.m [E|W], e.g. 172:34.5 E with E for East.
display_end_latitude	character varying(16)		End Latitude in degrees and minutes formatted for display purposes in format DD:MM.m S, with S for South.
display_end_longitude	character varying(16)		End Longitude in degrees and minutes formatted for display purposes in format DDD:MM.m [E|W], e.g. 172:34.5 E with E for East.
trunc_start_latitude	numeric(3,1)		Start position latitude in decimal degrees truncated to 1/10th of a degree (format DD.d).
trunc_start_longitude	numeric(4,1)		Start position longitude in decimal degrees east of Greenwich truncated to 1/10th of a degree (format DDD.d).

trunc_end_latitude	numeric(3,1)		End position latitude in decimal degrees truncated to 1/10th of a degree (format DD.d).
trunc_end_longitude	numeric(4,1)		End position longitude in decimal degrees east of Greenwich truncated to 1/10th of a degree (format DDD.d).
start_obs_fma	character varying(5)		The (derived) observer fma area code associated with the Start Latitude and Longitude.
end_obs_fma	character varying(5)		The (derived) observer fma area code associated with the End Latitude and Longitude.
start_stats_area	character varying(4)		The (derived) stats area code associated with the Start Latitude and Longitude.
end_stats_area	character varying(4)		The (derived) stats area code associated with the End Latitude and Longitude.
vessel_key	numeric(9,0)	No	The Ministry of Fisheries allocated key for the vessel.
trip_number	integer	No	The trip number allocated by the observer programme.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_type_key	numeric(9,0)	No	System generated key to identify the types of event e.g., Fishing event, Non Fish by-catch event.
the_geom	geometry		Postgis line type geometry from start position to end position of event.
created_date	date	No	Date when this event was created.
updated_date	date	No	Date when this event was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Colon separated short error texts for errors for the row.

Indexes:
  "pk_x_event" PRIMARY KEY, btree (event_key)
  "ndx_x_event_start_date" btree (event_start_date)
  "ndx_x_event_the_geom" gist (the_geom)
  "ndx_x_event_trip_key" btree (trip_key)
  "ndx_x_event_trip_number" btree (trip_number)
Check constraints:
  "enforce_dims_the_geom" CHECK (ndims(the_geom) = 2)
  "enforce_geotype_the_geom" CHECK (geometrytype(the_geom) = 'LINESTRING'::text OR the_geom IS NULL)
  "enforce_srid_the_geom" CHECK (srid(the_geom) = 4326)
Foreign-key constraints:
  "fk_x_event_end_fma" FOREIGN KEY (end_obs_fma) REFERENCES x_area_ref(area_code)

```
    ON UPDATE RESTRICT ON DELETE RESTRICT
   "fk_x_event_end_stats_area" FOREIGN KEY (end_stats_area)
    REFERENCES x_stat_area_ref(area_code)     ON UPDATE RESTRICT ON DELETE RESTRICT
   "fk_x_event_start_fma" FOREIGN KEY (start_obs_fma) REFERENCES x_area_ref(area_code)
    ON UPDATE RESTRICT ON DELETE RESTRICT
   "fk_x_event_start_stats_area" FOREIGN KEY (start_stats_area)
    REFERENCES x_stat_area_ref(area_code)     ON UPDATE RESTRICT ON DELETE RESTRICT
   "fk_x_event_x_event_type" FOREIGN KEY (event_type_key)
    REFERENCES x_event_type(event_type_key)
   "fk_x_event_x_trip" FOREIGN KEY (trip_key) REFERENCES x_trip(trip_key)
Referenced by:
   TABLE "x_bycatch_incident" CONSTRAINT "fk_x_bycatch_x_event" FOREIGN KEY (event_key)
    REFERENCES x_event(event_key)     ON UPDATE RESTRICT ON DELETE RESTRICT
   TABLE "x_event_extra_positions" CONSTRAINT "fk_x_event_extra_positions" FOREIGN KEY (event_key)
    REFERENCES x_event(event_key)
   TABLE "x_fishing_event" CONSTRAINT "fk_x_fishing_event_x_event" FOREIGN KEY (event_key)
    REFERENCES x_event(event_key)     ON UPDATE RESTRICT ON DELETE RESTRICT
   TABLE "x_purseseine_activity" CONSTRAINT "fk_x_purseseine_log_x_event" FOREIGN KEY (event_key)
    REFERENCES x_event(event_key)     ON UPDATE RESTRICT ON DELETE RESTRICT
   TABLE "x_sighting" CONSTRAINT "fk_x_sighting_event_key" FOREIGN KEY (event_key)
    REFERENCES x_event(event_key)
   TABLE "x_status" CONSTRAINT "fk_x_status_event_key" FOREIGN KEY (event_key)
    REFERENCES x_event(event_key)
   TABLE "x_vme_details" CONSTRAINT "fk_x_vme_details_x_event" FOREIGN KEY (event_key)
    REFERENCES x_event(event_key)     ON UPDATE RESTRICT ON DELETE RESTRICT
```

Table x_event_extra_positions

Comment: Extra date, time and position (latitude/longitude) data relating to events associated with a fishing trip.

Column	Type	Null?	Description
event_key	numeric(10,0)	No	System generated unique key to identify the event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
start_voyage_number	integer		Starting voyage number associated with the fishing event.
end_voyage_number	integer		Ending voyage number associated with the fishing event.
fishing_start_date	date		The date (with time excluded) for the start of fishing, ie at deployment of fishing gear or after target depth is reached for trawling.
fishing_start_time	time without time zone		The start time of fishing (in hh:mm:ss format), ie when fishing gear is deployed or after target depth is reached for trawling.
fish_start_latitude	numeric(8,6)		Latitude of the position at the start of fishing in decimal degrees
fish_start_longitude	numeric(9,6)		Longitude of the position at the start of the fishing event in decimal degrees
display_fish_start_latitude	character(12)		Latitude of the position at start of deployment of fishing gear or after target depth is reached for trawling, in degrees and minutes formatted for display purposes in format DD:MM.mmmm S
display_fish_start_longitude	character(13)		Longitude of the position at end of deployment of fishing gear or after target depth is reached for trawling, in degrees and minutes formatted for display purposes in format DDD MM.mmmm [E|W], e.g. 172 34.1234 E with E for East.
fishing_end_date	date		The date (with time excluded) for the end of fishing, ie at the start of hauling the fishing gear.
fishing_end_time	time without time zone		The end time of fishing (in hh:mm:ss format), ie at the start of hauling the fishing gear.
fish_end_latitude	numeric(8,6)		The latitude in decimal degrees at the start of hauling the fishing gear.
fish_end_longitude	numeric(9,6)		The longitude in decimal degrees at the start of hauling the fishing gear.
display_fish_end_latitude	character(12)		The latitude at the start of hauling the fishing gear, in degrees and minutes formatted for display purposes in format DD:MM.mmmm S.
display_fish_end_longitude	character(13)		The longitude at the start of hauling the fishing gear, in degrees and minutes formatted for display purposes in format DDD:MM.mmmm S.

error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying		Comma separated short error texts for errors for the row.
created_date	date	No	Date when this row was created.
updated_date	date	No	Date when this row was last updated.

Indexes:
  "pk_x_event_extra_positions" PRIMARY KEY, btree (event_key)
Foreign-key constraints:
  "fk_x_event_extra_positions" FOREIGN KEY (event_key) REFERENCES x_event(event_key)

Table x_event_type
Comment: Type structure to identify the different types of event, e.g. Age Event, Fishing Event, Processing Event.

Column	Type	Null?	Description
event_type_key	numeric(9,0)	No	System generated key to identify the types of event.
event_type_description	character varying(75)	No	Description of the types of event, e.g., Fishing Event, Non Fish by-catch event, Sighting event.

Indexes:
"pk_x_event_type" PRIMARY KEY, btree (event_type_key) CLUSTER
Referenced by:
TABLE "x_event" CONSTRAINT "fk_x_event_x_event_type" FOREIGN KEY (event_type_key)
REFERENCES x_event_type(event_type_key)

Table x_fishing_effort_event

Comment: A link between an observer event associated with fishing effort e.g a Surface Lining Event and its associated Set.

Column	Type	Null?	Description
fishing_effort_event_key	numeric(10,0)	No	System generated unique key to identify the fishing effort event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this fishing effort event was created.
updated_date	date	No	Date when this fishing effort event was last updated.
event_code	character varying(5)	No	Code to identify the described event.
event_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Event Code.
event_time	time without time zone		Time at which the event or activity started (NZST).
minutes_number	integer		Number of minutes described event lasted for. Note that prior to 1991 it recorded the duration of the whole set (SLL).
event_comment	character varying(512)		Comment about the event.
fishing_event_key	numeric(9,0)	No	System generated key for the fishing effort event.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_x_fishing_effort_event" PRIMARY KEY, btree (fishing_effort_event_key)
Foreign-key constraints:
  "fk_x_fishing_effort_event_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_fishing_effort_extra_info

Comment: Additional information captured about a series of fishing events e.g use of baits or snoods on a series of sets.

Column	Type	Null?	Description
fishing_effort_extra_info_key	numeric(9,0)	No	System generated unique key to identify the fishing_effort_extra_info.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this fishing_effort_extra_info was created.
updated_date	date	No	Date when this fishing effort extra info was last updated.
effort_extra_info_type_key	numeric(9,0)	No	System generated key to identify the type of extra information for the effort e.g. Snoods , Bait
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
"pk_x_fishing_effort_extra_info" PRIMARY KEY, btree (fishing_effort_extra_info_key)
Foreign-key constraints:
"fk_x_fishin_x_trip_fi_x_trip" FOREIGN KEY (trip_key) REFERENCES x_trip(trip_key)
ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "x_bait_usage" CONSTRAINT "fk_x_bait_u_x_extra_i_x_fishin" FOREIGN KEY (fishing_effort_extra_info_key)
REFERENCES x_fishing_effort_extra_info(fishing_effort_extra_info_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_fishing_event_usage" CONSTRAINT "fk_x_fishin_x_extra_i_x_fishin" FOREIGN KEY (fishing_effort_extra_info_key)
REFERENCES x_fishing_effort_extra_info(fishing_effort_extra_info_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_snood_usage" CONSTRAINT "fk_x_snood__x_extra_i_x_fishin" FOREIGN KEY (fishing_effort_extra_info_key)
REFERENCES x_fishing_effort_extra_info(fishing_effort_extra_info_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_fishing_event

Comment: Generic information associated with a set of fishing effort.

Column	Type	Null?	Description
fishing_event_key	numeric(9,0)	No	System generated unique key of the fishing event.
target_species	character(3)		Species code for the species being targeted.
fishing_method	character varying(3)	No	Fishing method code.
sequence_number	integer		The sequence number a fishing event within the trip. This is the set number for Purse seine.
total_onboard_greenweight	integer		Weight of catch when net hauled aboard in kilograms. This will equal total_surface_greenweight unless fish are lost from the net.
gw_onboard_part1_lookup_key	numeric(9,0)		System generated lookup key associated with the total_onboard_greenweight method First part: the extent of catch data for the tow/set (Purse Seine).
gw_onboard_part2_lookup_key	numeric(9,0)		System generated lookup key associated with the total_onboard_greenweight method Second part: how weight was derived (Purse Seine).
gw_onboard_part3_lookup_key	numeric(9,0)		System generated lookup key associated with the total_onboard_greenweight method Third part: the reliability of 2nd part (Purse Seine).
total_surface_greenweight	integer		Total weight of catch when net surfaces (kg).
gw_surface_part1_lookup_key	numeric(9,0)		System generated lookup key associated with the total_surface_greenweight method First part: the extent of catch data for the tow/set (Purse Seine).
gw_surface_part2_lookup_key	numeric(9,0)		System generated lookup key associated with the total_surface_greenweight method Second part: how weight was derived (Purse Seine).
gw_surface_part3_lookup_key	numeric(9,0)		System generated lookup key associated with the total_surface_greenweight method Third part: the reliability of 2nd part (Purse Seine).
start_seabed_depth	integer		Depth to seabed at the start of fishing event (e.g. tow) in metres.

end_setting_seabed_depth	integer		Seabed depth at end of setting (m).
start_haul_seabed_depth	integer		Seabed depth at start of hauling (m).
end_seabed_depth	integer		Depth (metres) to the bottom (from either the net or the vessel) at the end of the tow.
cloud_cover_setting	integer		Percentage cloud cover at start of setting.
wind_direction_setting	integer		Wind direction (0-359 deg) at start of setting.
beaufort_scale	character(2)		The number on the Beaufort scale that best represents the sea state, (0 - 12).
beaufort_scale_lookup_key	numeric(9,0)		System generated lookup key associated with the beaufort scale.
fishing_speed	numeric(3,1)		Speed of vessel in knots while fishing (trawl speed).
station_number	integer		A sequential identifier for each fishing event, eg a tow or set. Purse Seine events are sequential from the activity log. Troll fishing events are a distinct period of effort.
greenweight_method	character(4)		Code to identify method used to determine total greenweight on board.
greenwt_method_code_lookup_key	numeric(9,0)	No	System generated Lookup key associated with the greenweight method code.
shot_offal_discharge	character(1)		Code to describe what happened to any offal produced during the time of shooting.
shot_offal_lookup_key	numeric(9,0)		System generated lookup key associated with the shot_offal_discharge column.
shot_fish_discharge	character(1)		Code to describe what happened to any whole fish discards produced during the time of shooting.
shot_fish_lookup_key	numeric(9,0)		System generated lookup key associated with the shot_fish_discharge column.
tow_offal_discharge	character(1)		Code to describe what happened to any offal produced during the tow.
tow_offal_lookup_key	numeric(9,0)		System generated lookup key associated with the tow_offal_discharge column.
tow_fish_discharge	character(1)		Code to describe what happened to any whole fish discards produced during the tow.
tow_fish_lookup_key	numeric(9,0)		System generated lookup key associated with the tow_fish_discharge column.
haul_offal_discharge	character(1)		Code to describe what happened to any offal produced during the time of hauling.
haul_offal_lookup_key	numeric(9,0)		System generated lookup key associated with the haul_offal_discharge column.
haul_fish_discharge	character(1)		Code to describe what happened to any whole fish discards produced during the time of hauling.
haul_fish_lookup_key	numeric(9,0)		System generated lookup key associated with the haul_fish_discharge column.
mitigation_equipment	character varying(12)		Mitigation equipment codes as 1 or more 2 character codes, e.g. S1 or B1T1 etc.

mitigation_events	character varying(12)		Mitigation event codes, as 1 or more 1 character codes.
mitigation_event_lookup_key	numeric(9,0)		System generated lookup key associated with the mitigation events.
nonfish_bycatch	character(1)		Code to show whether any non-fish bycatch (seabird, marine mammal, marine reptile) occurred. Y = Yes, N = No, U = Not observed.
benthic_material	character(1)		Code to show whether any benthic materials came up in the tow. Y = Yes, N = No, U = Not observed.
conditions_timing_haul	character(1)		Period during hauling when conditions were assessed: S = Start M = Mid-point E = End. Refer to lookup key
conditions_timing_haul_lookup_key	numeric(9,0)		Lookup code for period during hauling when conditions were assessed. Refer to x_lookup_code (lookup_code_type_key=XXX)
time_conditions_assessed_haul	time(6) without time zone		Time during hauling when conditions were assessed (NZST 24hr).
cloud_cover_haul	integer		Percentage cloud cover observed during S/M/E period of hauling.
wind_direction_haul	integer		Wind direction (0-359 deg) as observed during S/M/E period of hauling
beaufort_hauling	character(2)		Beaufort scale that represents the sea state at S/M/E period of hauling. Refer to lookup key.
beaufort_hauling_lookup_key	numeric(9,0)		Refer to x_lookup_code (lookup_code_type_key=22)
vessel_speed_hauling	numeric(3,1)		Vessel speed (knots) at S/M/E period of hauling.
comment_catch_weight	character varying(512)		
observed_yn	character(1)		Fishing event observed, Y if observer gathered information, N if not (off shift), only available for certain types of trip.
ce_fishing_event_key	character varying(12)	No	The catch effort form code and form number. Or may contain a derived catch effort event key.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date when this fishing event was created.
updated_date	date	No	Date when this fishing event was last updated.
event_key	numeric(9,0)	No	System generated key to identify the event associated with the fishing event.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Colon separated short error texts for errors for the row.

Indexes:
  "pk_x_fishing_event" PRIMARY KEY, btree (fishing_event_key)
  "ndx_x_fishing_event_target_sp" btree (target_species)
Foreign-key constraints:
  "fk_x_fishing_event_method" FOREIGN KEY (fishing_method)
   REFERENCES x_fishing_method(fishing_method) ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_x_fishing_event_species" FOREIGN KEY (target_species)
   REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_x_fishing_event_x_event" FOREIGN KEY (event_key) REFERENCES x_event(event_key)
   ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
  TABLE "x_bottom_lining_effort" CONSTRAINT "fk_x_bottom_longline_fishing_event" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "x_fishing_event_usage" CONSTRAINT "fk_x_fishin_x_fish_ev_x_fishin" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "x_fishing_event_catch_specimen" CONSTRAINT "fk_x_fishin_x_fish_ev_x_fishin" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "x_fishing_effort_event" CONSTRAINT "fk_x_fishing_effort_event_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "x_fishing_event_catch" CONSTRAINT "fk_x_fishing_event_catch_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "x_fishing_event_comment" CONSTRAINT "fk_x_fishing_event_comment_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "x_oto_fish_event" CONSTRAINT "fk_x_oto_fish_ref_x_fishing_event" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "x_purseseine_effort" CONSTRAINT "fk_x_purseseine_set_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key)
  TABLE "x_setnet_effort" CONSTRAINT "fk_x_setnet_effort_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "x_surface_lining_effort" CONSTRAINT "fk_x_surface_lining_effort_x_fishing_event" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "x_trawl_effort" CONSTRAINT "fk_x_trawl_effort_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

TABLE "x_troll_effort" CONSTRAINT "fk_x_troll_effort_ref" FOREIGN KEY (fishing_event_key)
 REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_warp_strike" CONSTRAINT "fk_x_warp_strike_ref" FOREIGN KEY (fishing_event_key)
 REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_fishing_event_biological

Comment: Biological data for individual squid & fish specimens sampled by observers.

Column	Type	Null?	Description
biological_key	numeric(9,0)	No	Unique key to identify each biological record.
species	character(3)	No	Species Code for the squid or fish sampled.
grade	character varying(8)		Grade where sample taken on graded fish. Scampi; 1..5, A,B(tails) & Jumbo.
fish_number	integer	No	Sequential identifying number of an individual fish.
copulated_yn	character(1)		Whether the Female Squid copulated.
fish_sex_code	integer		Code to Identify the sex of a fish e.g. 0=unsexed, 1=male, 2=female, 3=unknown (unable to determine).
fish_sex_lookup_key	numeric(9,0)		System generated lookup key associated with the sex code.
fish_length	integer		Dorsal mantle length (DML) of the squid, or length of the fish, in cm.
length_code	character varying(4)		Measurement method code relating to fish_length, e.g. 1 = Fork Length, 2 = Total length, 3 = Standard length, 4 = Mantle length etc.
length_code_lookup_key	numeric(9,0)		System generated lookup key associated with the length code.
fish_weight	numeric(9,3)		Weight of the individual fish or squid in kg.
gonad_code	smallint		Code for the stage of gonad maturity.
gonad_lookup_key	numeric(9,0)		Key to link to lookup table that documents codes used in gonad_code column.
fish_length2	integer		Second length measurement of the fish using a different measurement method to fish_length.
length2_code	character varying(4)		Measurement method code for fish_length2.
length2_code_lookup_key	numeric(9,0)		System generated lookup key associated with the length2 code.
age_material_collected	character(1)		Age material was collected from the fish: Y = Yes scheduled otolith, X = Yes chosen extra (NR) otolith, N = No otolith.
age_material_lookup_key	numeric(9,0)		System generated lookup key associated with the age material collected.
shell_state	character(1)		Shell state for SCI: 0 = soft, 1 = hard.
shell_state_lookup_key	numeric(9,0)		System generated lookup key associated with the shell state.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
catch_sample_key	numeric(9,0)	No	System generated key to identify each species sampled from a fishing event.
created_date	date	No	Date when this row was created.

updated_date	date	No	Date when this row was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
"pk_x_fishing_event_biological_" PRIMARY KEY, btree (biological_key)
Foreign-key constraints:
"fk_x_biological_x_catch_sample" FOREIGN KEY (catch_sample_key)
REFERENCES x_fishing_event_catch_sample(catch_sample_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_fishing_event_catch

Comment: Species specific catch associated with a set of fishing effort.

Column	Type	Null?	Description
fishing_event_catch_key	numeric(10,0)	No	System generated unique key to identify each catch record from fishing events.
species	character(3)		Species Code for the fishing event catch recorded.
greenweight	numeric(11,3)		Greenweight of the species in kilograms.
weight_method_part1	character(1)		Part 1 of the greenweight method: A code for location of the catch at time of analysis or the device used to weigh fish for BLL.
weight_method_part1_lookup	numeric(9,0)		System generated lookup key associated with the weight method, part 1.
weight_method_part2	character varying(3)		Part 2 of the greenweight method: The code for method used for analysis eg K = weighted in full.
weight_method_part2_lookup	numeric(9,0)		System generated lookup key associated with the greenweight method, part 2.
number_of_fish	integer		The number of fish caught for this catch record (eg for BLL or troll).
discard_status	character varying(3)		Code to identify the discard status.
discard_status_lookup	numeric(9,0)	No	System generated Lookup key for the discard status code.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this fishing_event_catch was created.
updated_date	date	No	Date when this fishing event catch was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_x_fishing_event_catch" PRIMARY KEY, btree (fishing_event_catch_key)
  "ndx_x_fishing_event_catch_fe" btree (fishing_event_key)
  "ndx_x_fishing_event_catch_sp" btree (species)
  "ndx_x_fishing_event_catch_trip_key" btree (trip_key)
Foreign-key constraints:
  "fk_x_fishing_event_catch_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_fishing_event_catch_sample

Comment: Catch data by tow for all species used for sampling.

Column	Type	Null?	Description
catch_sample_key	numeric(9,0)	No	Unique key of the fishing_event_catch_sample.
species	character(3)		3 character code for a species sampled from the tow.
grade	character varying(8)		Grade where sample taken on graded fish. Scampi: 1..5, A,B(tails), Jumbo & Standard.
sub_sample_number	integer		Sub-sampling number for species JMM, JMN or JMD. A maximum of four sub-samples per species per tow.
sample_weight	numeric(11,3)		Weight (kg) of the sample taken from the whole catch of the tow.
sample_weight_method_code	integer		Code for the method of obtaining the sample weight. Codes were changed sometime between 2002 and 2009. Up to at least 2002: 1 = Salter scales, 2 = SeaWay scales, 3 = Platform Scales, 4 = Accurate electronic scales (vessels), 99 = Other weighing method or weight estimated.
sample_weight_meth_lookup_key	numeric(9,0)	No	System generated lookup key associated with the sample weight method code.
catch_weight	numeric(11,3)		Weight (kg) of the catch of the species from the tow.
catch_weight_method_code	character varying(4)		Up to 3 char code for the method of obtaining catch weights at sea.
weight_method_loc_lookup_key	numeric(9,0)	No	Lookup key associated with the weight method location section of the catch weight method code.
weight_method_anal_lookup_key	numeric(9,0)	No	Lookup key associated with the weight method analysis section of the catch weight method code.
male_length_wgt_parm_code	integer		Unique integer code for the male length/weight regression parameters.
male_len_wgt_parm_lookup_key	numeric(9,0)	No	Lookup key associated with the male length weight parameter.
female_length_wgt_parm_code	integer		Unique integer code for the female length/weight regression parameters.
female_len_wgt_parm_lookup_key	numeric(9,0)	No	Lookup key associated with the female length weight parameter.
species_length_wgt_parm_code	integer		Unique integer code for the species length/weight regression parameters.

spec_len_wgt_parm_lookup_key	numeric(9,0)	No	Lookup key associated with the species weight parameter.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event.
created_date	date	No	Date this fishing_event_catch_sample was created.
updated_date	date	No	Date when this fishing event catch sample was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
"pk_x_fishing_event_catch_sample" PRIMARY KEY, btree (catch_sample_key)
Referenced by:
TABLE "x_fishing_event_biological" CONSTRAINT "fk_x_biological_x_catch_sample" FOREIGN KEY (catch_sample_key)
REFERENCES x_fishing_event_catch_sample(catch_sample_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_fishing_event_catch_specimen

Comment: Description of catches of specimens (fish, birds, seals, etc) made by tuna longlines.

Column	Type	Null?	Description
fishing_event_catch_spec_key	numeric(9,0)	No	System generated unique key to identify the fishing_event_catch_specimen.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	Fishing event key derived from the trip key and set number.
sample_number	integer		Sample Number for the specimen, should be unique within the trip.
species	character(3)		Species code for the specimen recorded.
landed_time	time without time zone		The time observer recorded the specimen as being landed (24 hour time NZST).
species_status	smallint		Code to identify the species status. Not used since 1991.
species_status_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Species Status Code.
specimen_life	character varying(4)		Code to denote the level of the specimens life signs (used from 1992).
specimen_life_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Specimen Life Code.
handling_code	character varying(4)		Code to denote the crews handling of the specimen (used from 1992).
handling_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Handling Code.
life_status_landed	character(1)		Code to denote life status of specimen when landed or brought alongside vessel.
life_status_landed_lookup_key	numeric(9,0)	No	System generated lookup key associated with Life Status Landing.
fate	character(3)		Final fate of specimen - discard state, lost, unobserved; or primary processing type, if retained.
fate_lookup_key	numeric(9,0)	No	System generated lookup key associated with Fate code.
hook_location	character(1)		Hook location code. 1=Mouth, 2=Gullet, 3=Gills, 4=Gut, 5=Foul-Hooked.
hook_location_lookup_key	numeric(9,0)	No	System generated lookup key associated with Hook location code.
shark_handling	character varying(4)		Code to denote crew handling & treatment of sharks.
old_damage_code	character varying(2)		Code to describe the type and severity of damage to a specimen. Used up to the 1991 season, from 1992 the value has been captured in damage_code (with a new set of values).
damage_code	character varying(3)		Numeric code for the type of damage to the specimen (caused by driftnets, shark bites, etc) on specimens. Used from 1992 previously the value was captured in old_damage_code (with a different set of values).

damage_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Damage Code.
number_caught	integer		Number caught, including those recorded individually and those tallied.
fork_length	integer		Fork length of the specimen in centimetres. Except for billfish - lower jaw to fork.
length2	integer		Second length reading for specimen in centimetres. For billfish - eye to fork length; For sharks - total length from 2003 onwards, precaudal length prior to 2002.
length2_code	character(1)		Code to denote type of length recorded as length2 (for billfish & sharks); 2=Total Length, E=Eye to Fork Length (billfish).
greenweight	numeric(9,1)		Greenweight of the specimen in kilograms.
gw_method	integer		Code describing method used to obtain greenweight.
gw_meth_lookup_key	numeric(9,0)	No	System generated lookup key associated with GW Method code.
processing_code	character varying(4)		Code to indicate type of processing done on the specimen.
processed_weight	numeric(11,3)		Processed weight of the specimen in kilograms.
pw_method	integer		Code describing method used to weigh processed fish.
pw_meth_lookup_key	numeric(9,0)	No	System generated lookup key associated with PW Method code.
sex_code	integer		Code to Identify the sex of a fish, 1=male, 2=female, 3=unknown (unable to determine), 4=unsexed.
sex_lookup_key	numeric(9,0)	No	System generated lookup key associated with the fish sex code.
basket_number	integer		Number of the Basket (of hooks) in which specimen was caught. Not used since 1997.
bait_code	integer		Code to identify type of bait used. Not used since 1992.
bait_lookup_key	numeric(9,0)	No	System generated lookup key associated with the bait code.
sample_1_code	smallint		Code for 1st sample taken from specimen.
sample_2_code	smallint		Code for 2nd sample taken from specimen.
sample_3_code	smallint		Code for 3rd sample taken from specimen.
sample_4_code	smallint		Code for 4th sample taken from specimen.
sample_5_code	smallint		Code for 5th sample taken from specimen.
sample_6_code	smallint		Code for 6th sample taken from specimen.
sample_7_code	smallint		Code for 7th sample taken from specimen.
sample_8_code	smallint		Code for 8th sample taken from specimen.
true_species	character(3)		The species code as identified by a bird autopsy specialist or the Natural History Museum.

observation_type	smallint		Observation data type code: 1=observed, 2=tallied, 3=prior to start of observations, 4=after end of observations, 5=missed at unknown time during haul.
seabird_age	character(2)		Age of seabirds A=adult, AB=adult breeder, AN=adult nonbreeder, SA=subadult, I=immature, J=juvenile.
specimen_performance_code	integer		Performance flag for the catch specimen record: 1 = OK; 0 = Reject.
specimen_perf_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Specimen Performance Code.
created_date	date	No	Date this fishing_event_catch_specimen was created.
updated_date	date	No	Date when this fishing_event_catch_specimen was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
"pk_x_fishing_event_catch_specimen" PRIMARY KEY, btree (fishing_event_catch_spec_key)
"ndx_x_fishing_event_catch_specimen_species" btree (species)
Foreign-key constraints:
"fk_x_fishin_x_fish_ev_x_fishin" FOREIGN KEY (fishing_event_key)
REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "x_specimen_stomach" CONSTRAINT "fk_x_sll_stomach_ref" FOREIGN KEY (fishing_event_catch_spec_key)
REFERENCES x_fishing_event_catch_specimen(fishing_event_catch_spec_key)
TABLE "x_stomach_contents" CONSTRAINT "fk_x_stomach_contents_ref" FOREIGN KEY (fishing_event_catch_spec_key)
REFERENCES x_fishing_event_catch_specimen(fishing_event_catch_spec_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_fishing_event_comment

Comment: Fishing event comments, eg from BLL, SLL events.

Column	Type	Null?	Description
fishing_event_comment_key	numeric(9,0)	No	System generated key associated with a fishing event comment.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this fishing event comment was created.
updated_date	date	No	Date this fishing event comment was last updated.
fishing_event_key	numeric(9,0)	No	System generated key of the fishing event for the comment.
fishing_event_comment	character varying(800)		Comment text associated with the fishing event.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_x_bottom_longline_comment" PRIMARY KEY, btree (fishing_event_comment_key)
Foreign-key constraints:
  "fk_x_fishing_event_comment_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_fishing_event_usage

Comment: The usage of generalised fishing information on specific sets of effort e.g. Bait or Snood Usage on specific sets (between the start and end set numbers).

Column	Type	Null?	Description
fishing_event_usage_key	numeric(9,0)	No	System generated unique key of Fishing Event Usage.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this fishing_event_usage was created.
updated_date	date	No	Date when this fishing_event_usage was last updated.
fishing_event_key	numeric(9,0)	No	System generated unique key of the associated fishing event.
fishing_effort_extra_info_key	numeric(9,0)	No	System generated unique key to identify the fishing_effort_extra_info.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
"pk_x_fishing_event_usage" PRIMARY KEY, btree (fishing_event_usage_key)
Foreign-key constraints:
"fk_x_fishin_x_extra_i_x_fishin" FOREIGN KEY (fishing_effort_extra_info_key)
REFERENCES x_fishing_effort_extra_info(fishing_effort_extra_info_key) ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_x_fishin_x_fish_ev_x_fishin" FOREIGN KEY (fishing_event_key)
REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_fishing_gear

Comment: Trolling Fishing Gear Form information.

Column	Type	Null?	Description
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
gear_comment	character varying(512)		Comments recorded on the Observer Trolling Gear form.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date when this row was created.
updated_date	date		Date when this record was last updated.

Indexes:
"pk_x_fishing_gear" PRIMARY KEY, btree (trip_key)
Foreign-key constraints:
"fk_x_fishing_gear_ref" FOREIGN KEY (trip_key) REFERENCES x_trip(trip_key)
ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "x_troll_heads" CONSTRAINT "fk_x_troll_heads_ref_x_troll_" FOREIGN KEY (trip_key)
REFERENCES x_fishing_gear(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_troll_hooks" CONSTRAINT "fk_x_troll_hooks_ref" FOREIGN KEY (trip_key)
REFERENCES x_fishing_gear(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_troll_skirts" CONSTRAINT "fk_x_troll_skirts_ref_" FOREIGN KEY (trip_key)
REFERENCES x_fishing_gear(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_fishing_method

Comment: List of valid fishing methods, e.g. MW Midwater Trawl, SLL Surface Longlining etc.

Column	Type	Null?	Description
fishing_method	character(3)	No	Code to identify the fishing method, e.g. SLL, PS.
fishing_method_description	character varying(512)	No	Description of the fishing method e.g. BLL - Bottom Long Line, PS - Purse Seine.

Indexes:
"pk_x_fishing_method" PRIMARY KEY, btree (fishing_method)
Referenced by:
TABLE "x_fishing_event" CONSTRAINT "fk_x_fishing_event_method" FOREIGN KEY (fishing_method)
REFERENCES x_fishing_method(fishing_method) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_fma_ref

Comment: Reference table to define the New Zealand Fisheries Management Areas.

Column	Type	Null?	Description
gid	integer		Grid reference.
mfish_id	integer		Ministry of Fisheries Boundary id.
description	character varying(30)		The description of areas defined in this table: Fisheries Management Area.
fma_id	character varying(5)		The FMA area code (As used by observers).
fma_name	character varying(30)		The description of the FMA area for the area code of this row.
accuracy	character varying(100)		Map certification details.
layer_id	character varying(10)		Layer id.
title	character varying(40)		Ministry of Fisheries title.
km	character varying(20)		Coastline in kilometres (includes coastline of all islands within this boundary).
area_ha	character varying(20)		Area in hectares.
sw_member	integer		Sw ref.
the_geom	geometry		The geometric definition of the area.

Indexes:
  "fma_pkey" PRIMARY KEY, btree (gid)
Check constraints:
  "enforce_dims_the_geom" CHECK (ndims(the_geom) = 2)
  "enforce_geotype_the_geom" CHECK (geometrytype(the_geom) = 'MULTIPOLYGON'::text OR the_geom IS NULL)
  "enforce_srid_the_geom" CHECK (srid(the_geom) = 4326)

Table x_haul_effort

Comment: Hourly information of observed tuna longline hauls.

Column	Type	Null?	Description
haul_effort_key	numeric(9,0)	No	System generated unique key of Haul Effort.
trip_number	integer	No	The trip number allocated by the observer programme.
set_number	smallint	No	Number assigned by observers to a distinct observed set.
haul_date	date		Date on which the haul commenced.
haul_time	time without time zone		Time of observation of haul (HH:MM).
haul_latitude	integer		Haul position latitude in degrees and minutes (format DDMM).
haul_longitude	integer		Haul position longitude in degrees and minutes (format DDDMM).
haul_east_west	character(1)		Haul position meridian, E or W at observation time.
decimal_haul_latitude	numeric(8,6)		Haul position latitude in decimal degrees (format DD.dddddd).
decimal_haul_longitude	numeric(9,6)		Haul position longitude in decimal degrees east of Greenwich (format DD.dddddd).
trunc_haul_latitude	numeric(3,1)		Haul position latitude at observation time in decimal degrees truncated to 1/10th of a degree (format DD.d).
trunc_haul_longitude	numeric(4,1)		Haul position longitude at observation time in decimal degrees truncated to 1/10th of a degree (format DD.d).
bottom_depth	integer		Depth of bottom at time of haul in metres.
surface_temperature	numeric(3,1)		Sea surface temperature (decimal degrees C).
vessel_speed	numeric(3,1)		Speed of the vessel during the haul in knots.
vessel_heading	smallint		Vessels heading at time of observation in degrees (0 to 359).
wind_beaufortscale	smallint		Beaufort scale wind force at time of haul in range 0 to 12.
wind_direction	smallint		Wind direction at time of haul in degrees (0 to 360).
end_hauled_first	character(1)		Whether the end that was set first was hauled first (Yes) or the end that was set last was hauled first (No).
start_finish_code	character(1)		Code to identify significant observation records for each haul: S=Start (first record), F=finish (last record), O=Observer observations end (usually when 12 hours worked),

			L=Late start by observer.
start_finish_lookup_key	numeric(9,0)		System generated lookup key associated with the observation status e.g. Start, Finish Code.
haul_performance_code	character(1)		Performance flag for the haul record. 1 = OK, 2 = Reject.
haul_performance_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Haul Performance Code.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated key of the event for the haul effort.
fishing_event_key	numeric(9,0)	No	System generated key of the fishing event for the haul effort.
created_date	date	No	Date this haul_effort was created.
updated_date	date	No	Date when this haul effort was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
"pk_x_haul_effort" PRIMARY KEY, btree (haul_effort_key)
Foreign-key constraints:
"fk_x_haul_effort_x_sl_effort" FOREIGN KEY (fishing_event_key)
REFERENCES x_surface_lining_effort(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_length_frequency

Comment: Length frequency data for a length class for any one species.

Column	Type	Null?	Description
length_frequency_key	numeric(9,0)	No	Unique key for the length frequency class.
species	character(3)	No	Species code for the species being sampled.
grade	character varying(8)		Designated grade for the length class sampled.
sub_sample_number	integer		Sub-sampling number for species JMM, JMN or JMD. A maximum of four sub-samples per species per tow.
length	integer	No	Length class for the length frequency (lowest whole cm, except Crustacea in mm).
length_measure_lookup_key	numeric(9,0)	No	System generated lookup key associated with the length measure code.
length_measure_code	character(1)		1 character code for the method of measuring length.
male_number	integer		Frequency of males in the length class.
female_number	integer		Frequency of females in the length class.
female_stage1	integer		Frequency of the female stage one gonads.
female_stage2	integer		Frequency of the female stage two gonads.
female_stage3	integer		Frequency of the female stage three gonads.
female_stage4	integer		Frequency of the female stage four gonads.
female_stage5	integer		Frequency of the female stage five gonads.
all_fish_number	integer	No	Frequency of all fish in the length class, including unsexed fish.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	System generated key of the associated fishing event for the station.
male_stage1	integer		Frequency of the males with stage one gonads if males were staged.
male_stage2	integer		Frequency of the males with stage two gonads if males were staged.
male_stage3	integer		Frequency of the males with stage three gonads if males were staged.
male_stage4	integer		Frequency of the males with stage four gonads if males were staged.
male_stage5	integer		Frequency of the males with stage five gonads if males were staged.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

created_date	date	No	Date when this length_frequency row was created.
updated_date	date	No	Date when this length_frequency row was last updated.

Indexes:
"pk_x_length_frequency" PRIMARY KEY, btree (length_frequency_key)

Table x_lining_haul_effort

Comment: Profile information on observed hauls of longline vessels

Column	Type	Null?	Description
fishing_event_key	numeric(9,0)	No	Fishing event key derived from the trip key and set number.
trip_number	integer	No	Trip number allocated by the observer programme.
set_number	smallint	No	Number assigned by observers to a distinct observed set.
end_hauled_first	character(1)		Which end of line hauled first: 1 = End set first, 2 = End set last.
start_recd_by_obs	character(1)		Whether hauling start details were recorded by: Y = observer, or N = vessel.
start_date	date		Start date of hauling.
start_time	time without time zone		Start time of hauling.
start_depth	integer		Seabed depth at start of hauling (m).
start_latitude	numeric(5,1)		Latitude at start of hauling (DDMM.m format).
start_north_south	character(1)		Northern or Southern Hemisphere for start latitude.
start_longitude	numeric(6,1)		Longitude at start of hauling (DDDMM.m format).
start_east_west	character(1)		Eastern or Western hemisphere for start longitude.
end_recd_by_obs	character(1)		Whether hauling end details were recorded by: Y = observer, or N = vessel.
end_date	date		End date of hauling.
end_time	time without time zone		End time of hauling.
end_depth	integer		Seabed depth at end of hauling (m).
end_latitude	numeric(5,1)		Latitude at end of hauling (DDMM.m format).
end_north_south	character(1)		Northern or Southern Hemisphere for end latitude.
end_longitude	numeric(6,1)		Longitude at end of hauling (DDMM.m format).
end_east_west	character(1)		Eastern or Western hemisphere for end longitude.
mid_cloud_cover	smallint		Cloud cover percentage at mid-point of hauling.
mid_wind_direction	smallint		Wind direction (bearing 0-359 degrees) at mid-point of hauling.
mid_beaufort	smallint		Beaufort scale conditions at mid-point of hauling.
mid_beaufort_lookup_key	numeric(9,0)	No	System generated lookup key for Beaufort scale value.
mid_vessel_speed	numeric(3,1)		Vessel speed (knots) at mid-point of hauling.

summed_hooks_obs_hauled	integer	Sum of hooks observed hauled during observation periods 1-6, as recorded by the observer. Refer to x_lining_haul_observation for detail of observed periods.
port_offal_discard	character(1)	Code for offal discarding on port side: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
port_bait_discard	character(1)	Code for bait discarding on port side: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
port_whole_fish_discard	character(1)	Code for whole fish discarding on port side: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
stbd_offal_discard	character(1)	Code for offal discarding on starboard side: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
stbd_bait_discard	character(1)	Code for bait discarding on starboard side: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.

stbd_whole_fish_discard	character(1)	Code for whole fish discarding on starboard side: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
stern_offal_discard	character(1)	Code for offal discarding aft over stern: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
stern_bait_discard	character(1)	Code for bait discarding aft over stern: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
stern_whole_fish_discard	character(1)	Code for whole fish discarding aft over stern: C = discarded Continually, O = discarded Occasionally, B = retained & Batch discarded once holding bin full, R = Retained and discarded once setting complete, N = No discarding.
water_cannon_yn	character(1)	Whether water cannons were used as a mitigation strategy for protected species captures (Y/N)
acoustic_bird_deterrent_yn	character(1)	Whether acoustic bird deterrents were used as a mitigation strategy for protected species captures (Y/N).
brickle_curtain_yn	character(1)	Whether a brickle curtain was deployed while hauling (Y/N).
other_mitigation_yn	character(1)	Whether any other mitigation devices were used during the haul (Y/N). Detailed in observer comments.
fishing_gear_discard_yn	character(1)	Whether fishing gear was discarded (Y/N).
entire_haul_observed_yn	character(1)	Whether the entire haul was observed (Y/N).

number_hooks_lost	integer		Number of hooks lost, excluding those deliberately cut off.
comments	character varying		Observer comments on line hauling event.
haul_start_datetime	timestamp without time zone		Start date time of the hauling event.
decimal_start_latitude	numeric(8,6)		Start position latitude in decimal degrees (format DD.dddddd).
decimal_start_longitude	numeric(9,6)		Start position longitude in decimal degrees east of Greenwich (format DDD.dddddd)
start_display_latitude	character(9)		Start Latitude formatted for display purposes in format DD:MM.mS.
start_display_longitude	character(10)		Start Longitude formatted for display purposes in format DDD:MM.m[E|W], e.g. 172:34.5E with E for East.
haul_end_datetime	timestamp without time zone		End date time of the hauling event.
decimal_end_latitude	numeric(8,6)		End position latitude in decimal degrees (format DD.dddddd).
decimal_end_longitude	numeric(9,6)		End position longitude in decimal degrees east of Greenwich (format DDD.dddddd).
end_display_latitude	character(9)		End Latitude formatted for display purposes in format DD:MM.mS.
end_display_longitude	character(10)		End Longitude formatted for display purposes in format DDD:MM.m[E|W], e.g. 172:34.5E with E for East.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated event key derived from the trip key and set number.
created_date	date	No	Date this record was created.
updated_date	date	No	Date when this record was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.

Indexes:
"pk_x_lining_haul_effort" PRIMARY KEY, btree (fishing_event_key)
Foreign-key constraints:
"fk_x_lining_haul_effort_x_sl_eff" FOREIGN KEY (fishing_event_key)
REFERENCES x_surface_lining_effort(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "x_lining_haul_observation" CONSTRAINT "fk_x_lining_haul_observation__x_l_haul_effort" FOREIGN KEY (fishing_event_key)
REFERENCES x_lining_haul_effort(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_lining_haul_observation

Comment: Haul observation periods and numbers of hooks observed hauled, from observed haul events on longline vessels.

Column	Type	Null?	Description
haul_obs_key	numeric(9,0)	No	System generated unique key for haul observation records. Derived from fishing_event_key and observation period number
trip_number	integer	No	Trip number allocated by the observer programme.
set_number	smallint	No	Number assigned by observers to a distinct observed set.
obs_period	smallint	No	Number of the haul observation period
obs_start	time without time zone		Start time of the observation period.
obs_end	time without time zone		End time of the observation period.
obs_hooks_hauled	integer		Number of hooks observed hauled during the observed period.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	Fishing event key derived from the trip key and set number.
created_date	date	No	Date this record was created.
updated_date	date	No	Date when this record was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.

Indexes:
  "pk_x_lining_haul_observation" PRIMARY KEY, btree (haul_obs_key)
Foreign-key constraints:
  "fk_x_lining_haul_observation__x_l_haul_effort" FOREIGN KEY (fishing_event_key)
   REFERENCES x_lining_haul_effort(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_lookup_code

Comment: Generalised lookup code structure to include all 'one-off' code value/ description pairs

Column	Type	Null?	Description
lookup_code_key	numeric(9,0)	No	System generated key associated with the lookup value.
lookup_code	character varying(4)		The (source) code associated with the lookup value.
lookup_code_type_key	numeric(9,0)	No	System generated key for the lookup type.
lookup_code_description	character varying(512)	No	Description associated with the lookup value (code or integer code)
created_date	date	No	Date this lookup code was created.
updated_date	date	No	Date when this lookup code was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_x_lookup_code" PRIMARY KEY, btree (lookup_code_key)
Foreign-key constraints:
  "fk_x_lookup_code_ref" FOREIGN KEY (lookup_code_type_key)
   REFERENCES x_lookup_type(lookup_code_type_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_lookup_type

Comment: Descriptions for each look-up code type. e.g. 22 = Beaufort scale of wind force.

Column	Type	Null?	Description
lookup_code_type_key	numeric(9,0)	No	System generated key to identify each look-up type, in the x_lookup_code table.
lookup_type_description	character varying(512)	No	Description of the group of codes used, for any single attribute that has an associated look-up key.

Indexes:
"pk_x_lookup_type" PRIMARY KEY, btree (lookup_code_type_key)
Referenced by:
TABLE "x_lookup_code" CONSTRAINT "fk_x_lookup_code_ref" FOREIGN KEY (lookup_code_type_key)
REFERENCES x_lookup_type(lookup_code_type_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_mitigation_description

Comment: Descriptions of mitigation devices.

Column	Type	Null?	Description
mitigation_descript_key	numeric(9,0)	No	System generated key to identify the mitigation device description.
device_type	character varying(3)		Code for the type of mitigation device.
description	character varying(80)		Description of the mitigation device.

Indexes:
"pk_x_mitigation_description" PRIMARY KEY, btree (mitigation_descript_key)
"ndx_x_mitigation_device" UNIQUE CONSTRAINT, btree (device_type)
Referenced by:
TABLE "x_warp_strike_device" CONSTRAINT "fk_x_mitigation_description" FOREIGN KEY (device_type)
REFERENCES x_mitigation_description(device_type) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_mitigation_event

Comment: Coded details of any mitigation events during an observation sampling period.

Column	Type	Null?	Description
mitigation_event_key	numeric(10,0)	No	System generated unique key to identify the mitigation event.
warpstrike_sample_key	numeric(10,0)	No	System generated key of the warp strike sample.
fishing_event_key	numeric(10,0)	No	System generated key of the fishing event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_code	character(1)		Code for the mitigation event, refer event_lookup_key.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date when this row was created.
updated_date	date		Date when this row was last updated.
event_lookup_key	numeric(9,0)		System generated lookup key associated with the event_code

Indexes:
  "pk_x_mitigation_event" PRIMARY KEY, btree (mitigation_event_key)
Foreign-key constraints:
  "fk_x_mitigation_events_ref" FOREIGN KEY (warpstrike_sample_key)
   REFERENCES x_warp_strike_sample(warpstrike_sample_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_nz_coastlines_islands_ref

Comment: Reference table to define the New Zealand coastline and islands.

Column	Type	Null?	Description
gid	integer		
name	character varying(255)		Name of the geographic feature, e.g., Island or rock.
macronated	character varying(16)		If the spelling of the name uses macrons, Y or N.
grp_macron	character varying(16)		If the spelling of the grp_name uses macrons, Y or N.
grp_ascii	character varying(60)		grp_name, without macrons.
grp_name	character varying(60)		Name of the group the geographic feature belongs to, e.g., Island group like "Auckland Islands".
name_ascii	character varying(75)		Name of the geographic feature, without macrons.
geom_4326	geometry		

Indexes:
  "x_nz_coastlines_islands_ref_pkey" PRIMARY KEY, btree (gid)
  "x_nz_coastlines_islands_ref_geom_4326_gist" gist (geom_4326)
Check constraints:
  "enforce_dims_geom_4326" CHECK (ndims(geom_4326) = 2)
  "enforce_geotype_geom_4326" CHECK (geometrytype(geom_4326) = 'MULTIPOLYGON'::text OR geom_4326 IS NULL)
  "enforce_srid_geom_4326" CHECK (srid(geom_4326) = 4326)

Table x_oto_catalog

Comment: A Catalog of the ageing material, its storage location and current ageing status.

Column	Type	Null?	Description
oto_catalog_key	numeric(9,0)	No	System generated key to identify the otolith catalog.
age_year	smallint		The year the fish was sampled, fishing year for SOP samples.
sample_number	integer		Sample number from which the aging sample was taken within the trip. This is the station number, eg tow or set number.
species_area	character(7)		Area code for where the fish was caught, typically FMA code.
species	character(3)		Species code of the fish.
fish_number	integer		Sequential identifying number of an individual fish for any one trip, sample, sub sample, and species.
material_code	integer		Code to identify material collected for ageing e.g. 1 Otolith 2 Scales 3 Spines 4 Vertebrae 5 Teeth 6 Statolith (cephalopod).
material_lookup_key	numeric(9,0)	No	System generated lookup key associated with the material code.
room_name	character varying(50)		Room number where the ageing material can be found.
sub_location_name	character varying(50)		Location within the room, e.g. file cabinet number, draw number.
age_status_code	character(4)		Latest Status Code for the ageing.
status_date	date		Date that the specimen achieved the latest status.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
oto_fish_event_key	numeric(9,0)	No	System generated key to identify the age_fish_event.
created_date	date	No	Date when this row was created.
updated_date	date	No	Date when this row was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_x_oto_catalog" PRIMARY KEY, btree (oto_catalog_key)
Foreign-key constraints:
  "fk_x_oto_catalog_ref" FOREIGN KEY (oto_fish_event_key)
   REFERENCES x_oto_fish_event(oto_fish_event_key)   ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_oto_fish_event

Comment: Biological Information about a fish specimen for aging.

Column	Type	Null?	Description
oto_fish_event_key	numeric(9,0)	No	System generated key to identify the age_fish_event.
age_year	smallint	No	The year the fish was sampled, fishing year for SOP samples.
trip_number	numeric(9,0)	No	The trip number on which the aging sample was taken, = trip_code from age database.
sample_number	integer	No	Sample number for the fish being aged within the trip, this is the station_number, eg tow or set number.
species_area	character(5)		Area code for where the fish was caught, typically FMA code.
species	character(3)	No	Species code of the fish.
fish_number	integer		Sequential identifying number of an individual fish for any one trip, sample, sub sample, and species.
fish_length	numeric(4,1)		Length measurement of the fish in cm.
length_code	character(1)		Code to identify precision of length measurement, R = Rounded down to nearest cm, E = Exact to 1 decimal place.
length_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the length code.
fish_sex_code	integer		Code to Identify the sex of a fish e.g. 0=unsexed, 1=male, 2=female, 3=unknown (unable to determine).
fish_sex_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the fish sex code.
gonad_stage	character(1)		Numeric code for stage of gonad maturity.
fish_weight	numeric(8,3)		Weight (kilograms) of the fish.
otolith_weight	numeric(7,4)		Weight (grams) of an otolith.
otolith_weight2	numeric(7,4)		Weight (grams) of the second otolith.
otolith_length	numeric(4,1)		Length (mm) of an otolith.
otolith_width	numeric(3,1)		Width (mm) of an otolith.
material1_code	integer	No	Code to identify material collected for ageing e.g. 1 Otolith 2 Scales 3 Spines

			4 Vertebrae 5 Teeth 6 Statolith (cephalopod).
material1_lookup_key	numeric(9,0)	No	System generated lookup key associated with the first material code.
material2_code	integer		Code to identify a second material collected for ageing e.g. 1 Otolith 2 Scales 3 Spines 4 Vertebrae 5 Teeth 6 Statolith (cephalopod).
material2_lookup_key	numeric(9,0)	No	System generated lookup key associated with the second material code.
fish_selection_method_code	integer		Code for how the fish was selected for ageing: 1 = random, 2 = every i th fish, 3 = by size class.
fish_sel_method_lookup_key	numeric(9,0)	No	System generated lookup key associated with the fish selection method code.
fish_sampled_comment	character varying(64)		An indication of whether there is a comment held against the fish sampled.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated key to identify the event associated with the age fish event.
fishing_event_key	numeric(9,0)	No	System generated key of the fishing event at which the sample was taken.
created_date	date	No	Date when this row was created.
updated_date	date	No	Date when this row was updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_x_oto_fish_event" UNIQUE, btree (oto_fish_event_key)
Foreign-key constraints:
  "fk_x_oto_fish_ref_x_fishing_event" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
  TABLE "x_oto_catalog" CONSTRAINT "fk_x_oto_catalog_ref" FOREIGN KEY (oto_fish_event_key)
   REFERENCES x_oto_fish_event(oto_fish_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_processed_event_catch_detail

Comment: Specific species processed catch information.

Column	Type	Null?	Description
process_event_catch_detail_key	numeric(9,0)	No	System generated unique identifier of the processed_event_catch_detail.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
species	character(3)		Species Code for the processed event catch recorded.
processed_state	character(3)		Code to identify the state to which the fish has been processed to.
processed_state_lookup	integer		System generated Lookup key associated with processed state.
units_number	integer		Number of cartons/trays/bags produced for that species, state and grade.
unit_number_tag	smallint		A tag which identifies whether the count was done by the vessel or by the observer: 2 = count by observer, 3 = daily vessel count, 4 = tow by tow vessel count.
unit_weight	numeric(6,2)		The weight of that particular unit in kilograms.
unit_weight_tag	smallint		A tag which identifies whether the unit weights were determined by the vessel or by the observer: 1 = vessel weight, 2 = observer derived weight.
greenweight	numeric(11,3)		Greenweight of the species in kilograms used in the processing.
processed_weight	numeric(11,3)		Calculated processed weight in kilograms as number_of_units * unit_weight.
fish_mealed_greenweight	numeric(11,3)		The greenweight of fish mealed in kilograms.
meal_method_code	character varying(4)		Code to identify method of analysis of fish mealed (see logbook instructions).
meal_method_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Meal Method Code.
discard_method_code	character varying(4)		Code to identify the method of analysis of fish discarded (see logbook instructions).
discard_method_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Discard Method Code.
grade_code	character varying(7)		Code to identify the grade code of the product.
grade_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Grade Code.
conversion_factor	numeric(7,4)		Conversion factor applied to processed product to get weight of fish processed.
con_factor_tag	integer		Code to identify which conversion factor was used (see logbook instructions).
con_factor_tag_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Conversion Factor Tag Code.

other_product_code	character varying(4)		Code to identify other products (see logbook instructions).
other_product_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Other Product Code.
other_product_weight	numeric(11,3)		Weight of other product produced in kilograms.
fish_discarded_greenweight	numeric(11,3)		The greenweight of fish discarded in kilograms.
processing_event_catch_key	numeric(9,0)	No	System generated unique identifier of the processing_event_catch.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this processed_event_catch_detail was created.
updated_date	date	No	Date when this processed event catch detail was last updated.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
unit_number_tag_lookup_key	numeric(9,0)		System generated lookup key associated with the unit_number_tag.
unit_weight_tag_lookup_key	numeric(9,0)		System generated lookup key associated with the unit_weight_tag.
location_of_analysis	character(1)		Part 1 greenweight method: the location of catch at time of analysis.
loc_of_analysis_lookup_key	numeric(9,0)		System generated lookup key associated with the greenweight method Part 1: the location of catch at time of analysis.
method_analysis	character varying(3)		Part 2: the method used greenweight analysis eg K = weighted in full.
method_analysis_lookup_key	numeric(9,0)		System generated lookup key associated with the greenweight method Part 2: the method used for analysis eg K = weighted in full.

Indexes:
"pk_x_processed_event_catch_det" PRIMARY KEY, btree (process_event_catch_detail_key)

Table x_processed_species_summary

Comment: Summary data for each species in observer_processed (only up to April 1990).

Column	Type	Null?	Description
processed_species_summary_key	numeric(9,0)	No	System generated unique identifier of the processed_species_summary.
species	character(3)		Species Code for the processed weight summary recorded.
fish_mealed_greenweight	numeric(11,3)		The greenweight of fish mealed in kilograms.
meal_method_code	character(4)		Code to identify method of analysis of fish mealed (see logbook instructions).
meal_method_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Meal Method Code.
discard_method_code	character(4)		Code to identify the method of analysis of fish discarded (see logbook instructions).
discard_method_code_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Discard Method Code.
calculated_greenweight	numeric(11,3)		Calculated greenweight in kilograms as number_of_units * unit_weight * conversion_factor.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
processing_event_key	numeric(9,0)	No	System generated unique identifier of the processing_event.
created_date	date	No	Date this processed species summary was created.
updated_date	date	No	Date when this processed species summary was last update.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_x_processed_species_summary" PRIMARY KEY, btree (processed_species_summary_key)
Foreign-key constraints:
  "fk_x_processed_species_summary_ref" FOREIGN KEY (processing_event_key)
   REFERENCES x_processing_event(processing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_processing_event

Comment: Summary information about on-board processing for a tow or group of tows.

Column	Type	Null?	Description
processing_event_key	numeric(9,0)	No	System generated unique identifier of the processing_event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated key to identify the event associated with the processing event.
created_date	date	No	Date this processing_event was created.
updated_date	date	No	Date when this processing_event was last updated.
sequence_number	integer		The sequence number of the processing event within the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
"pk_x_processing_event" PRIMARY KEY, btree (processing_event_key)
Foreign-key constraints:
"fk_x_processing_event_ref" FOREIGN KEY (trip_key) REFERENCES x_trip(trip_key)
ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "x_processed_species_summary" CONSTRAINT "fk_x_processed_species_summary_ref" FOREIGN KEY (processing_event_key)
REFERENCES x_processing_event(processing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_processing_event_catch" CONSTRAINT "fk_x_processing_event_catch_ref" FOREIGN KEY (processing_event_key)
REFERENCES x_processing_event(processing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_processing_event_catch

Comment: Summary catch information associated with a days processing on a vessel.

Column	Type	Null?	Description
processing_event_catch_key	numeric(9,0)	No	System generated unique identifier of the processing_event_catch.
total_calc_greenweight	numeric(11,3)		Sum of calculated_greenweights in kilograms.
total_fish_discarded	numeric(11,3)		Total greenweight of fish discarded in kilograms.
total_fish_mealed	numeric(11,3)		Total greenweight of fish mealed in kilograms
meal_produced	numeric(11,3)		Weight of meal produced in kilograms.
oil_produced	numeric(9,3)		Amount of fish oil produced in litres.
discard_species1_code	character(3)		Species code of first discarded species.
tows_number	integer		Number of tows covered by processed catch.
discard_species2_code	character(3)		Species code of second discarded species.
group_number	integer	No	Sequential number for a group (by tow daily) of processed records.
processing_event_key	numeric(9,0)	No	System generated unique identifier of the associated processing_event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this processing_event_catch was created.
updated_date	date	No	Date when this proceessing event catch was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
tow_min	smallint		Minimum tow this processed data applies to. From July 2007 ver 3 logbooks.
tow_max	smallint		Maximum tow this processed data applies to. From July 2007 ver 3 logbooks.
complete_flag	character(1)		Flag to indicate that a complete set of processing data can be generated for the group tows in the tow range. (Y/N) From July 2007 ver 3 logbooks.
tow_range	character varying(12)		A range of tows for a set of processing data. From section 8 & 9 (either or both) of July 2007 ver 3 logbooks.

Indexes:
  "pk_x_processing_event_catch" PRIMARY KEY, btree (processing_event_catch_key)
Foreign-key constraints:
  "fk_x_processing_event_catch_ref" FOREIGN KEY (processing_event_key)

REFERENCES x_processing_event(processing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_purseseine_activity

Comment: Details from all activities recorded on the observer programme purse seine Vessel Activity log (includes sets).

Column	Type	Null?	Description
event_key	numeric(9,0)	No	System generated event key.
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	smallint	No	A sequential number for each recorded activity on the Vessel Activity Log of an observer PS trip.
set_number	smallint		A sequential number for each set of a purseseine trip.
trip_day	smallint		Trip days since the observer joined the vessel.
activity	character varying(4)		Code for the vessel activity recorded on the Vessel Activity Log.
activity_lookup_key	numeric(9,0)	No	System generated lookup key associated with the code for the vessel activity.
beaufort	smallint		Beaufort scale code.
beaufort_lookup_key	numeric(9,0)	No	System generated lookup key associated with the beaufort scale.
school_association	character varying(2)		Code for how the target school was initially found. eg A9 if saw birds feeding on the target school.
school_assoc_lookup_key	numeric(9,0)	No	System generated lookup key associated with the school_association.
school_detected	character varying(2)		Code for who initially detected the target school.
school_detect_lookup_key	numeric(9,0)	No	System generated lookup key associated with the school_detected column.
target_species	character(3)		Target species recorded on the Vessel Activity Log.
aircraft_callsign	character varying(6)		Spotter aircraft call sign.
port	character varying(16)		Port where the vessel berthed.
comments	character varying(512)		Comments from the Vessel Activity Log.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date when this row was created.
updated_date	date	No	Date when this row was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	smallint	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
"pk_x_purseseine_log" PRIMARY KEY, btree (event_key)

"ui_x_purseseine_activity" UNIQUE, btree (trip_number, station_number)
"ndx_x_purseseine_activity_trip_key" btree (trip_key)
Foreign-key constraints:
"fk_x_purseseine_log_target_species" FOREIGN KEY (target_species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_x_purseseine_log_x_event" FOREIGN KEY (event_key) REFERENCES x_event(event_key)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_purseseine_effort

Comment: Set effort details from the Observer Programme Purse Seine Catch Effort form.

Column	Type	Null?	Description
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated event key.
fishing_event_key	numeric(9,0)	No	System generated key of the fishing event.
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	A sequential number for each station of an observer trip.
set_number	integer	No	A sequential number for each set of a purse seine trip.
sea_temperature	numeric(3,1)		Sea surface temperature, degrees Celsius.
start_set	time without time zone		Start of set, (time skiff off).
start_set_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
begin_purse	time without time zone		Time begin pursing (winch on).
begin_purse_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
end_purse	time without time zone		Time end pursing (rings up).
end_purse_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
net_rolling	time without time zone		Time net rolling started.
net_rolling_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
net_sacking	time without time zone		Time net sacking began.
net_sacking_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
begin_brail	time without time zone		Time begin brailing.
begin_brail_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
end_brail	time without time zone		Time end brailing.
end_brail_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
end_set	time without time zone		End of set, (time skiff on board).
end_set_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
result_code	character(1)		Result of set code, e.g. 1 = Entire school caught, 2 = Some caught / some lost, 3 = Entire school lost, etc.
result_code_lookup_key	numeric(9,0)		System generated lookup key associated with the result code.
brail_code	character(1)		Brail type code, P = suction pump, S = scoop, O = other.

brail_code_lookup_key	numeric(9,0)		System generated lookup key associated with the brail code.
total_losses	integer		Amount of loss of any (potential) catch during setting, kg.
loss_method	character(3)		Method code for determining amount of total losses.
loss_method_part1_lookup_key	numeric(9,0)		System generated lookup key associated with part 1 of the loss method.
loss_method_part2_lookup_key	numeric(9,0)		System generated lookup key associated with part 2 of the loss method.
loss_method_part3_lookup_key	numeric(9,0)		System generated lookup key associated with part 3 of the loss method.
loss_code	character(1)		Loss code that describes how the catch loss occurred.
loss_stage	character(2)		Event stage code indicating the stage of the fishing event when the catch loss occurred, e.g. SS = Start of Set, DP = During Pursing, etc.
loss_time	time without time zone		Time (NZST) that the primary catch loss occurred.
loss_time_code	character(1)		Time code for the recorded time: 1 = someone on watch (vessel), 2 = observer.
birds_obs	character(1)		If bird observations were undertaken for this set, Y/N.
mammal	smallint		Number of marine mammals captured in the tow.
seabird	smallint		Number of seabirds captured in the tow.
turtle	smallint		Number of turtles captured.
mdbd_yn	character(1)		MDBD Sampling done for this set, Y/N.
lf_yn	character(1)		LF Sampling done for this set, Y/N.
nfb_yn	character(1)		Non Fish Bycatch for this set, Y/N.
celr_no	character varying(16)		CELR number for this set.
comment_ce	character varying(380)		Comments from Catch Effort form.
created_date	date	No	Date when this row was created.
updated_date	date	No	Date when this row was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.

Indexes:
  "pk_x_purseseine_effort" PRIMARY KEY, btree (fishing_event_key)
  "ndx_x_purseseine_set_stn" btree (station_number)
  "ndx_x_purseseine_set_trip" btree (trip_number)
  "ndx_x_purseseine_set_trip_key" btree (trip_key)
Foreign-key constraints:
  "fk_x_purseseine_set_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key)

Table x_ref_observer

Comment: The list of Observers who may or have undertaken trips for the observer programme.

Column	Type	Null?	Description
observer_key	numeric(9,0)	No	System generated key to identify the observer.
observer_name	character varying(50)	No	Full Name of the observer in < Last Name> <First Name> format.
observer_status	character(3)	No	Status of the observer (to filter for entry of new trips), Values: CUR - Current, OBS - Obsolete.
start_date	date	No	Start Date from which this observer may be used.
end_date	date		End Date (if known) to which this observer may be used.
last_name	character varying(50)	No	Last name of the Observer.
first_name	character varying(50)	No	First name of the Observer.
observer_code	character(4)	No	Unique observer code. The first initial followed by the first 3 letters of observers surname, unless this is not unique.
created_date	date		Date when this row was created.
updated_date	date		Date when this row was last updated.

Indexes:
"pk_x_ref_observer" PRIMARY KEY, btree (observer_key)
"ui_x_ref_observer" UNIQUE, btree (observer_code)
Referenced by:
TABLE "x_trip_observer" CONSTRAINT "fk_x_trip_observer__obs" FOREIGN KEY (observer_key)
REFERENCES x_ref_observer(observer_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_setnet_effort

Comment: Setnet effort data from the Observer Setnet catch/Effort Form, and total_net_length from NOMAD data.

Column	Type	Null?	Description
fishing_event_key	numeric(9,0)	No	System generated unique key to identify a fishing event.
trip_number	integer	No	Trip number allocated by the observer programme.
set_number	integer	No	Sequential identifier for each set.
net_set_on_bottom	character(1)		Captain intended to set net on the bottom Y N or U.
net_set_clean	character(1)		The net was set clean of fish Y N or O.
set_interrupt_time	integer		Duration setting net was interrupted in minutes.
set_observed	character(1)		Observer did observe this setting. Y or N.
haul_observed	character(1)		Observer did observe this hauling. Y or N.
start_haul_date	date		Date at start of haul.
start_haul_time	time without time zone		Start time of haul (24 hour format, NZST).
end_hauled_first	character(1)		Direction net hauled, if backwards Y N or O.
end_hauled_lookup_key	numeric(9,0)		System generated lookup key associated with the direction net hauled.
end_haul_time	time without time zone		End time of haul (24 hour format, NZST).
haul_interrupt_time	integer		Duration hauling net was interrupted in minutes.
total_spacer	integer		The total length of all the spacer sections contained within this set (m).
bio_samples	smallint		The number of species with biological samples taken.
haul_beaufort	character(2)		The number on the Beaufort scale that best represents the sea state, (0 - 12) at start of hauling.
haul_beaufort_lookup_key	numeric(9,0)		System generated lookup key associated with the beaufort scale.
total_net_length	integer		Total length of all nets for this set (m), from NOMAD data ie y_ctn_fishing.effort column.
comments	character varying(512)		Comments for setnet Catch Effort.
haul_date_time	timestamp without time zone		Haul start date and time stored as a timestamp without time zone.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated unique key to identify the event.
created_date	date	No	Date when this row was created.
updated_date	date	No	Date when this row was last updated.

error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_x_setnet_effort" PRIMARY KEY, btree (fishing_event_key)
  "ui_x_setnet_effort_trip_set" UNIQUE, btree (trip_number, set_number)
  "ndx_x_setnet_effort_trip_key" btree (trip_key)
Foreign-key constraints:
  "fk_x_setnet_effort_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
  TABLE "x_setnet_nets_set" CONSTRAINT "fk_x_setnet_nets_set_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES x_setnet_effort(fishing_event_key)

Table x_setnet_gear

Comment: Set net gear details for a setnet trip.

Column	Type	Null?	Description
setnet_gear_key	numeric(9,0)	No	System generated key to identify each unique net on a setnet trip.
trip_number	integer	No	Trip number allocated by the observer programme.
observer_code	character(4)		Unique observer code. The first initial followed by the first 3 letters of observers surname, unless this is not unique.
net_id	character varying(5)		Setnet code for the setnet gear detailed.
net_height	numeric(5,2)		The height from foot rope to topline (m to 1 decimal).
net_mesh_size	smallint		Nominal net mesh size of net (mm).
float_size	smallint		Average float_size (mm).
max_float_spacing	numeric(5,2)		The maximum distance between floats (m to 1 decimal).
ground_weight	integer		Nominal average of ground weights. (gm)
max_weight_spacing	numeric(5,2)		The maximum distance between weights on ground rope (m).
max_pinger_spacing	numeric(5,2)		The maximum spacing between pingers (m). -1 = pingers used, spacing not recorded
net_length	integer		Length of the net (m), from form Version 2.
comments	character varying(512)		Any comments for the described setnet gear.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date when this row was created.
updated_date	date	No	Date when this row was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_x_setnet_gear" PRIMARY KEY, btree (setnet_gear_key)
  "ui_x_setnet_gear" UNIQUE, btree (trip_number, net_id)
  "ndx_x_setnet_gear_trip_number" btree (trip_number)
Foreign-key constraints:
  "fk_x_setnet_gear_ref" FOREIGN KEY (trip_key) REFERENCES x_trip(trip_key)

ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_setnet_nets_set

Comment: Set net gear used for a set.

Column	Type	Null?	Description
nets_set_key	integer	No	Unique number for each net set of a setnet Catch Effort record.
trip_number	integer	No	Trip number allocated by the observer programme.
set_number	integer	No	Sequential set number.
net_id	character varying(4)		Setnet code for the setnet detailed.
net_length	integer		The length of net used for the net ID (m). Used for v1 of the form only. Refer to x_setnet_gear for net_length from later form versions.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated unique key to identify the event.
fishing_event_key	numeric(9,0)	No	System generated unique key to identify a fishing event.
created_date	date	No	Date when this row was created.
updated_date	date	No	Date when this row was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
"pk_x_setnet_nets_set" PRIMARY KEY, btree (nets_set_key)
"ui_x_setnet_nets_set" UNIQUE, btree (trip_number, set_number, net_id)
"ndx_x_setnet_nets_set_trip" btree (trip_number)
Foreign-key constraints:
"fk_x_setnet_nets_set_ref" FOREIGN KEY (fishing_event_key)
REFERENCES x_setnet_effort(fishing_event_key)

Table x_sighting

Comment: Inshore interactions data related to observer sightings.

Column	Type	Null?	Description
event_key	numeric(10,0)	No	System generated event_key to identify the sighting.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
voyage_number	integer	No	Number assigned to voyage within a trip.
species	character(3)		3 character species code of animal sighted.
group_pod	smallint		An identifier for each distinct group of protected species sighted within a trip.
sequence_number	integer		Records information about each particular "group pod" through time.
parent_pod	smallint		Used when a particular group splits into 2 different groups exhibiting different behaviours.
adult_count	smallint		The number of adults in the sighting.
young_count	smallint		The number of young in the sighting.
activity	character varying(60)		A description of what the animal was doing (a specified list of values).
photo_date	date		The date that a photo was taken of the sighting.
photo_time	time without time zone		The time that a photo was taken of the sighting.
image_filename	character(256)		Filename(s) of photo(s) related to the sighting.
active_event_number	integer		Fishing event number (station number) of the active fishing event if applicable.
observer_status	character varying(20)		Either where physically the observer was on station or whether they were "off duty".
sighting_type	character(12)		Whether the sighting was random or non-random (i.e. as part of the sighting observation period).
commercial_vessels_visible	integer		A count of visible commercial fishing vessels.
other_vessels_visible	integer		A count of recreational and commercial non-fishing vessels.
visibility	integer		A measure of visibility: 1 - fog, 2 - poor, 3 - fair, 4 - good. Refer to x_lookup_codes (lookup_code_type_key = 194) for full description.
visibility_lookup_key	integer		Lookup_key for Visibility. Refer to x_lookup_codes (lookup_code_type_key = 194)
fishing_gear_interaction	character(10)		Proportion of animals interacting with fishing gear: None, Some or All.
fish_waste_discarded	character(1)		Whether fish waste was discarded during the observation period. (Y/N)

error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma seperated short texts for errors for the row.
created_date	date	No	Date when this row was created.
updated_date	date	No	Date when this row was last updated.

Indexes:
  "pk_x_sighting" PRIMARY KEY, btree (event_key)
Foreign-key constraints:
  "fk_x_sighting_event_key" FOREIGN KEY (event_key) REFERENCES x_event(event_key)

Table x_sled_details

Comment: Details of the Sea Lion Exclusion Device (SLED).

Column	Type	Null?	Description
sled_key	bigint	No	System generated key to identify the sled.
trip_number	integer	No	Trip number allocated by the observer programme.
obs1	character(5)		First initial followed by the first three letters of observers surname involved in the measurement of the SLED.
obs2	character(5)		As for obs1.
equipment_code	character varying(3)		Equipment code consisting of the letter S plus a number. Each SLED measured during the trip is numbered from 1 onwards.
measure_type	character varying(3)		Full to indicate that this is a full record of measurements. If changes then Partial and an Equipment code (eg S1) of the SLED that has been altered entered.
measure_type_lookup_key	numeric(9,0)		System generated lookup key associated with the measure type.
based_on	character varying(2)		Where a Partial measurement the Equipment Code (eg S1) of the device that has been altered.
measure_date	date		Date that the measurements were made.
measure_reason	character(1)		Code to explain reason this measurement was taken: I = Initial measurement D = description of the device in a Damaged state R = measurement of the device after it has been Repaired O = some Other reason for this measurement.
reason_lookup_key	numeric(9,0)		System generated lookup key associated with the measure reason.
grid_id	character varying(12)		Unique grid ID number of this SLED.
grid_type	character(1)		Type of grid used, e.g. 2 section, 3 section or Other.
grid_type_lookup_key	numeric(9,0)		System generated lookup key associated with grid type.
grid_shape	character(1)		Shape of the grid used, e.g. Oval, Oblong or Square.
grid_shape_lookup_key	numeric(9,0)		System generated lookup key associated with the grid shape.
grid_max_width	integer		Width of the grid at its widest point (including the width (mm) of the outer frame).
frame_min_dia	integer		Diameter of the steel bar that the frame of the grid is made in millimetres.

bar_min_dia	integer	Diameter of the steel bar that the bars of the grid are made of in millimetres.
section1_max_height	integer	Height (at its maximum point) of Section 1 excluding the thickness of the outer frame.
section2_max_height	integer	Height (at its maximum point) of Section 2 excluding the thickness of the outer frame.
section3_max_height	integer	Height (at its maximum point) of Section 3 excluding the thickness of the outer frame.
escape_hatch_width	integer	Width of the escape hatch at the base of the triangle (in millimetres).
escape_hatch_length	integer	Length of the escape hatch from the centre of the base to the apex (in millimetres)
hood_width	integer	Width of the hood (the distance between the leading corners of the hood, recorded in millimetres).
hood_height	integer	Height of the hood (the vertical distance to the top of the hood when it is fully extended, recorded in millimetres).
hood_length	integer	Length of the hood (the distance along the hood from the top of the hood to the back of the hood, recorded in millimetres).
hood_mesh	integer	Mesh size of the hood (in millimetres). From corner to corner along the diagonal of the mesh with the mesh stretched.
hood_edge_rope	integer	Length of Leading Edge of the hood (around the curve, in millimetres).
hood_floats	integer	A count of floats attached to the kite.
lengthener_mesh	integer	Mesh size of the lengthener (mm).
lengthener_type	character(1)	Whether the net in the lengthener is a 2 seam or a 4 seam net.
lengthener_type_lookup_key	numeric(9,0)	System generated lookup key associated with the lengthener_type.
kite_length	integer	Length of kite in mm.
kite_width	integer	Width of kite in mm.
kite_stitch	character(1)	Whether the stitching between the Kite and Leading Edge of the hood is continuous (no gaps).
sled_comments	character varying(600)	Comments from the SLED Details Form.
trip_key	numeric(9,0)	System generated trip key to identify the trip.
error_highest_level	smallint	The highest error level associated with the error messages for the row.
error_count	integer	The number of error messages for the row.
error_text	character varying(512)	Comma separated short error texts for errors for the row.
created_date	date	Date this row was created.

updated_date date No
Indexes:
"pk_x_sled_details" PRIMARY KEY, btree (sled_key)
"ndx_x_sled_trip" btree (trip_number)
"ndx_x_sled_trip_key" btree (trip_key)
Foreign-key constraints:
"fk_x_sled_details_ref" FOREIGN KEY (trip_key) REFERENCES y_observer_trip_master(trip_key)
ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "x_sled_grid" CONSTRAINT "fk_x_sled_grid_ref" FOREIGN KEY (sled_key)
REFERENCES x_sled_details(sled_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_sled_grid

Comment: Sled grid bar spacings.

Column	Type	Null?	Description
sled_grid_key	bigint	No	System generated key to identify the sled grid.
sled_key	bigint	No	System generated key to identify the sled.
trip_number	integer	No	Trip number allocated by the observer programme.
equipment_code	character varying(3)		Equipment code consisting of the letter S plus a number. Each SLED measured during the trip is numbered from 1 onwards.
section	smallint	No	Section number.
space_number	integer		Grid bar spacing number.
space_mm	integer		Grid bar spacing (mm) as the spaces between the bars.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date when this row was created.
updated_date	date		Date when this row was last updated.

Indexes:
  "pk_x_xsled_grid" PRIMARY KEY, btree (sled_grid_key)
  "ndx_x_sled_grid_key" btree (sled_key)
  "ndx_x_sled_grid_trip" btree (trip_number)
Foreign-key constraints:
  "fk_x_sled_grid_ref" FOREIGN KEY (sled_key) REFERENCES x_sled_details(sled_key)
   ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_sll_baskets

Comment: Surface long line gear, detail on baskets deployed for fishing events. From SLL gear form Version 3, August 2018.

Column	Type	Null?	Description
basket_key	numeric(9,0)	No	System generated key to identify the basket record.
trip_number	integer	No	Trip number allocated by the observer programme.
gear_code	character varying(3)	No	Code used as unique identifier for a single Longline configuration.
basket_number	smallint		Identifier for basket number deployed on longline configuration.
number_snoods	smallint		Number of snoods in the basket.
snood_length	smallint		Length of snoods (m).
hook_type	character varying(512)		Hook type and size, as referred to by retailers.
number_money_makers	smallint		Number of money-makers in the basket.
money_maker_diameter	smallint		Money-maker diameter (cm).
number_weighted_snoods	smallint		Number of weighted snoods deployed.
weighting_type	character(2)		Weighting type: H = Hook pods, S = Sliding weight, W = Weighted swivel, F = Fixed weights, C = shark Clip, O = Other (described in comments).
distance_weight_to_hook	integer		Distance between the hook and the closest weight (cm).
weight	integer		Mass of the weight closest to hook (g).
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
sll_gear_key	numeric(9,0)		System generated key to identify the SLL gear record.
created_date	date	No	Date this row was created.
updated_date	date	No	Date when this record was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.

Indexes:

```
    "pk_x_sll_baskets" PRIMARY KEY, btree (basket_key)
Foreign-key constraints:
    "fk_x_sll_baskets_x_sll_gear" FOREIGN KEY (sll_gear_key)
     REFERENCES x_sll_gear(sll_gear_key)
```

Table x_sll_gear

Comment: Surface long line gear data. From SLL gear form Version 3, August 2018.

Column	Type	Null?	Description
sll_gear_key	numeric(9,0)	No	System generated unique key to identify the SLL gear record.
trip_number	integer	No	Trip number allocated by the observer programme.
gear_code	character varying(3)	No	Code used as unique identifier for a single Longline configuration.
mainline_material	character varying		Material used in mainline construction.
mainline_diameter	numeric(3,1)		Diameter of the mainline/backbone (mm).
float_line_length	smallint		Length of the float/drop line (m).
float_line_diameter	smallint		Diameter of the float/drop line (mm).
surface_float_diameter	smallint		Diameter of the surface floats (cm)
comments	character varying		Observer comment on longline gear configuration.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this row was created.
updated_date	date	No	Date when this record was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.

Indexes:
  "pk_x_sll_gear" PRIMARY KEY, btree (sll_gear_key)
  "ui_x_sll_gear" UNIQUE CONSTRAINT, btree (trip_number, gear_code)
Foreign-key constraints:
  "fk_x_sll_gear_x_trip" FOREIGN KEY (trip_key) REFERENCES x_trip(trip_key)
   ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
  TABLE "x_sll_baskets" CONSTRAINT "fk_x_sll_baskets_x_sll_gear" FOREIGN KEY (sll_gear_key)
   REFERENCES x_sll_gear(sll_gear_key)

Table x_snood_usage

Comment: Profile on the snood arrangement strategy used on a range of tuna longline sets.

Column	Type	Null?	Description
snood_usage_key	numeric(9,0)	No	Unique identifier of the snood usage.
snood_num	smallint		Snood number to which the data applies, corresponds to bait_no in the bait table.
start_set_num	smallint		Starting set number to which the snood arrangement applies.
end_set_num	smallint		Final set number to which the snood arrangement applies.
total_length	integer		Total length of the identified snood in metres.
hook_colour_name	character varying(30)		Colour of the hook on the snood.
hook_type_name	character varying(30)		Type of hook on the snood.
baskets_descript	character varying(75)		Brief description of the range of baskets to which arrangement applies, if not present then applies to all baskets.
fishing_effort_extra_info_key	numeric(9,0)	No	System generated unique key to identify the fishing_effort_extra_info.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this snood_usage was created.
updated_date	date	No	Date when this snood usage was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
  "pk_x_snood_usage" PRIMARY KEY, btree (snood_usage_key)
Foreign-key constraints:
  "fk_x_snood__x_extra_i_x_fishin" FOREIGN KEY (fishing_effort_extra_info_key)
   REFERENCES x_fishing_effort_extra_info(fishing_effort_extra_info_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_species_codes

Comment: Valid Species codes.

Column	Type	Null?	Description
species_code	character(3)	No	3-character code to identify the species.
common_name	character varying(160)		Common name of the species.
scientific_name	character varying(160)		Scientific name of the species.
other_names	character varying(160)		Other names for the species.
notes	character varying(1000)		Any notes about the species including changes to taxonomy.
usage	character(1)		Usage code, e.g. R = Research, I = ITQ species, L = Commercial species used on LFRR returns, E = commercial species allowed only on catch Effort returns.
description	character(2)		Description code for species group. e.g. B- = Birds, C* = Crustacea, E* = Echinoderms, FG = Fish general, H- = Marine mammals, M* = Molluscs, N- = Cnidaria, P- = Porifera, R- = Reptiles etc.
family_common	character varying(40)		Common family name for the species.
family_scientific	character varying(40)		Scientific family name for the species.
prefer_meas_method	character varying(3)		List of up to 3 preferred measurement method codes, e.g., 1 = FL, 2 = TL, 3 = SL, 4 = ML etc.
max_length	integer		Recorded maximum length (cm).
species_class	character(1)		The classification of the species.
aphia_id	integer		Key to link to World Register of Marine Species (WoRMS), www.marinespecies.org .
max_weight	integer		Recorded maximum weight (grams).
fao_species_code	character(3)		Species code assigned by the Food and Agricultural Organisation (FAO).

Indexes:
"pk_x_species_codes" PRIMARY KEY, btree (species_code)
Referenced by:
TABLE "x_fishing_event" CONSTRAINT "fk_x_fishing_event_species" FOREIGN KEY (target_species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_purseseine_activity" CONSTRAINT "fk_x_purseseine_log_target_species" FOREIGN KEY (target_species)

REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_lfs_station" CONSTRAINT "fk_y_lfs_station_trg_species_ref" FOREIGN KEY (target_species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_nfb_nonfish_catch_2019_format" CONSTRAINT "fk_y_nfb_nonfish_catch_2019_format__obs_species" FOREIGN KEY (observer_species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_nfb_nonfish_catch_2019_format" CONSTRAINT "fk_y_nfb_nonfish_catch_2019_format__species" FOREIGN KEY (species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_nfb_nonfish_catch" CONSTRAINT "fk_y_nfb_nonfish_catch__obs_species" FOREIGN KEY (observer_species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_nfb_nonfish_catch" CONSTRAINT "fk_y_nfb_nonfish_catch__species" FOREIGN KEY (species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_ps_activity" CONSTRAINT "fk_y_ps_activity_target_species" FOREIGN KEY (target_species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_ps_catch" CONSTRAINT "fk_y_ps_catch_species" FOREIGN KEY (species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_setnet_catch" CONSTRAINT "fk_y_setnet_catch_species" FOREIGN KEY (species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_setnet_station" CONSTRAINT "fk_y_setnet_station_target_species" FOREIGN KEY (target_species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "y_trw_observer_station" CONSTRAINT "fk_y_trw_observer_station_trg_species_ref" FOREIGN KEY (target_species)
REFERENCES x_species_codes(species_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_specimen_stomach

Comment: Stomach sample data from fish caught on tuna surface longlines (SLL) vessels. See also table x_stomach_contents.

Column	Type	Null?	Description
fishing_event_catch_spec_key	integer	No	Unique identification number assigned to each specimen from SLL vessels.
trip_number	integer	No	The trip number assigned to each observed trip allocated by the observer programme.
set_number	smallint	No	Observed set to which following data applies.
sample_number	integer	No	Number assigned by observer to samples taken.
fish	smallint		Percentage of fish in the stomach contents.
crust	smallint		Percentage of crustaceans in the stomach contents.
squid	smallint		Percentage of squid in the stomach contents.
bait	smallint		Percentage of bait species in the stomach contents.
salps	smallint		Percentage of salps in the stomach contents.
other	smallint		Percentage of other or unknown species in the stomach contents.
plastic_ingested	character(1)		Code for type of plastic ingested.
plastic_ingested_lookup_key	numeric(9,0)	No	System generated lookup key associated with the plastic ingested.
plastic_external	character(1)		Code for type of external plastic.
plastic_external_lookup_key	numeric(9,0)	No	System generated lookup key associated with the plastic external.
stom_empty	character(1)		Code E denotes stomach was empty.
fish_code	character(3)		Code for fish species eaten, where known.
crust_code	character(3)		Code for crustacean species eaten, where known.
crust_lookup_key	numeric(9,0)	No	System generated lookup key associated with the bait code.
bait_code	character(3)		Code for bait species eaten, where known.
bait_lookup_key	numeric(9,0)	No	System generated lookup key associated with the bait code.
other_code	character(3)		Code for other food type eaten, where known.
other_lookup_key	numeric(9,0)	No	System generated lookup key associated with the other code.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	Fishing event key derived from the trip number and set number.
created_date	date	No	Date this row was created.
updated_date	date	No	Date when this row was last updated.

error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.

Indexes:
  "pk_x_specimen_stomach" PRIMARY KEY, btree (fishing_event_catch_spec_key)
Check constraints:
  "x_specimen_stomach_check_bait" CHECK (bait >= 0 AND bait <= 100)
  "x_specimen_stomach_check_crust" CHECK (crust >= 0 AND crust <= 100)
  "x_specimen_stomach_check_fish" CHECK (fish >= 0 AND fish <= 100)
  "x_specimen_stomach_check_other" CHECK (other >= 0 AND other <= 100)
  "x_specimen_stomach_check_salps" CHECK (salps >= 0 AND salps <= 100)
  "x_specimen_stomach_check_squid" CHECK (squid >= 0 AND squid <= 100)
Foreign-key constraints:
  "fk_x_sll_stomach_ref" FOREIGN KEY (fishing_event_catch_spec_key)
   REFERENCES x_fishing_event_catch_specimen(fishing_event_catch_spec_key)

Table x_stat_area_ref

Comment: Reference table to define the general New Zealand Fisheries Statistical areas.

Column	Type	Null?	Description
gid	integer	No	Grid reference.
mfish_id	integer		Ministry of Fisheries Boundary id.
description	character varying(40)		The description of areas defined in this table, Statistical Area number.
area_code	character varying(10)		The Statistical Area number.
certified	character varying(15)		Certified date.
accuracy	character varying(254)		Map certification details.
error_flag	character varying(1)		Error flag.
explanation	character varying(254)		Error explanation.
layer_id	character varying(10)		Layer id.
title	character varying(40)		Ministry of Fisheries title.
km	character varying(20)		Coastline in kilometres (includes coastline of all islands within this boundary).
area_ha	character varying(20)		Area in hectares.
sw_member	integer		Sw ref.
the_geom	geometry		The geometric definition of the area.

Indexes:
  "stat_area_pkey" PRIMARY KEY, btree (gid)
  "ui_x_stat_area_code" UNIQUE, btree (area_code)
Check constraints:
  "enforce_dims_the_geom" CHECK (ndims(the_geom) = 2)
  "enforce_geotype_the_geom" CHECK (geometrytype(the_geom) = 'MULTIPOLYGON'::text OR the_geom IS NULL)
  "enforce_srid_the_geom" CHECK (srid(the_geom) = 4326)
Referenced by:
  TABLE "x_event" CONSTRAINT "fk_x_event_end_stats_area" FOREIGN KEY (end_stats_area)
   REFERENCES x_stat_area_ref(area_code) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "x_event" CONSTRAINT "fk_x_event_start_stats_area" FOREIGN KEY (start_stats_area)

REFERENCES x_stat_area_ref(area_code) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_status

Comment: Inshore interactions status data, including if and where observer was on shift.

Column	Type	Null?	Description
event_key	numeric(10,0)	No	System generated event_key to identify the status event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
voyage_number	integer	No	Number assigned to voyage within a trip.
observer_status	character varying(20)		Either where physically the observer was on station or whether they were "off shift".
sea_state_beaufort	smallint		Sea state coded on the Beaufort scale.
beaufort_lookup_key	numeric(9,0)		System generated lookup key associated with the beaufort scale.
comm_vessels_visible	integer		A count of visible commercial fishing vessels.
oth_vessels_visible	integer		A count of recreational and commercial non fishing vessels.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma seperated short texts for errors for the row.
created_date	date	No	Date when this row was created.
updated_date	date	No	Date when this row was last updated.

Indexes:
  "pk_x_status" PRIMARY KEY, btree (event_key)
Foreign-key constraints:
  "fk_x_status_event_key" FOREIGN KEY (event_key) REFERENCES x_event(event_key)

Table x_stomach_contents

Comment: Stomach sample data from fish caught on Surface Long Line vessels, 2015 version.

Column	Type	Null?	Description
fishing_event_catch_spec_key	integer	No	Unique identification number assigned to each specimen recorded on the SLL Deck Log.
trip_number	integer	No	Unique identification number assigned to each specimen recorded on the SLL Deck Log.
set_number	integer	No	Observed set to which following data applies.
sample_number	integer	No	Number assigned by observer to samples taken.
species	character(3)		Species code of deck log specimen with stomach sampled.
fullness	character(1)		Stomach fullness of sampled specimen: 0=Empty, 1=Trace, 2=Part full(One quarter-three quarters full), 3=Full, 4=Everted.
fullness_lookup_key	numeric(9,0)	No	System generated lookup key associated with sample stomach fullness.
prey1_species	character(3)		Species code for identified prey species 1.
prey1_condition	smallint		Code to record prey 1 condition: 1=Fresh, 2=Part digested, 3=Heavily digested.
prey1_cond_lookup_key	numeric(9,0)	No	System generated lookup key associated with prey condition.
prey1_volume	smallint		Volume of prey 1 species as a percentage of total stomach contents.
prey2_species	character(3)		Species code for identified prey species 2.
prey2_condition	smallint		Code to record prey 2 condition: 1=Fresh, 2=Part digested, 3=Heavily digested.
prey2_cond_lookup_key	numeric(9,0)	No	System generated lookup key associated with prey condition.
prey2_volume	smallint		Volume of prey 2 species as a percentage of total stomach contents.
prey3_species	character(3)		Species code for identified prey species 3.
prey3_condition	smallint		Code to record prey 3 condition: 1=Fresh, 2=Part digested, 3=Heavily digested.
prey3_cond_lookup_key	numeric(9,0)	No	System generated lookup key associated with prey condition.
prey3_volume	smallint		Volume of prey 3 species as a percentage of total stomach contents.
prey4_species	character(3)		Species code for identified prey species 4.
prey4_condition	smallint		Code to record prey 4 condition: 1=Fresh, 2=Part digested, 3=Heavily digested.
prey4_cond_lookup_key	numeric(9,0)	No	System generated lookup key associated with prey condition.
prey4_volume	smallint		Volume of prey 4 species as a percentage of total stomach contents.
comments	character varying(512)		Observer comments associated with this stomach form record.

trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	Fishing event key derived from the trip number and set number.
created_date	date	No	Date this row was created.
updated_date	date	No	Date this row was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.

Indexes:
  "pk_x_stomach_contents" PRIMARY KEY, btree (fishing_event_catch_spec_key)
Check constraints:
  "x_stomach_contents_prey1_vol" CHECK (prey1_volume >= 0 AND prey1_volume <= 100)
  "x_stomach_contents_prey2_vol" CHECK (prey2_volume >= 0 AND prey2_volume <= 100)
  "x_stomach_contents_prey3_vol" CHECK (prey3_volume >= 0 AND prey3_volume <= 100)
  "x_stomach_contents_prey4_vol" CHECK (prey4_volume >= 0 AND prey4_volume <= 100)
Foreign-key constraints:
  "fk_x_stomach_contents_ref" FOREIGN KEY (fishing_event_catch_spec_key)
   REFERENCES x_fishing_event_catch_specimen(fishing_event_catch_spec_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_surface_lining_bait

Comment: Information on bait species used on observed sets of Tuna longline vessels.

Column	Type	Null?	Description
fishing_event_key	numeric(9,0)	No	Fishing event key derived from the trip key and set number.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
trip_number	integer	No	The Trip number allocated by the Observer Programme.
set_number	smallint	No	Number assigned by observers to a distinct observed set.
bait_1_species	character(3)		3-char species code for bait 1 species.
bait_1_composition	smallint		Percentage of total baited hooks comprising bait 1 species.
bait_1_state	character(1)		State of bait 1 species: F = Frozen, T = Thawed, S = Semi-thawed.
bait_1_dyed_yn	character(1)		Whether bait 1 was dyed (Y/N).
bait_2_species	character(3)		3-char species code for bait 2 species.
bait_2_composition	smallint		Percentage of total baited hooks comprising bait 2 species.
bait_2_state	character(1)		State of bait 2 species: F = Frozen, T = Thawed, S = Semi-thawed.
bait_2_dyed_yn	character(1)		Whether species 2 bait was dyed (Y/N).
bait_3_species	character(3)		3-char species code for bait 3 species.
bait_3_composition	smallint		Percentage of total baited hooks comprising bait 3 species.
bait_3_state	character(1)		State of bait 3 species: F = Frozen, T = Thawed, S = Semi-thawed.
bait_3_dyed_yn	character(1)		Whether species 3 bait was dyed (Y/N).
created_date	date	No	Date this surface lining effort was created.
updated_date	date	No	Date when this surface lining effort was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.

Indexes:
  "pk_x_surface_lining_bait" PRIMARY KEY, btree (fishing_event_key)
Foreign-key constraints:
  "fk_x_surface_lining_bait_x_sl_effort" FOREIGN KEY (fishing_event_key)
   REFERENCES x_surface_lining_effort(fishing_event_key)

Table x_surface_lining_effort

Comment: Profile information on all observed sets of tuna longlines.

Column	Type	Null?	Description
fishing_event_key	numeric(9,0)	No	Fishing Event key derived from the trip number and set number.
trip_number	integer	No	The Trip number allocated by the Observer Programme.
set_number	smallint	No	Number assigned by observers to a distinct observed set.
start_rec_by_obs	character(1)		Whether setting start details were recorded by: Y = observer, or N = vessel.
end_rec_by_obs	character(1)		Whether setting end details were recorded by: Y = observer, or N = vessel.
gear_code	character(3)		Gear code for the line set, refers to code on SLL Gear form.
bird_area	integer		Code for the bird area setting started in.
line_length	numeric(9,3)		Length of line in kilometres.
baskets_number	integer		Number of baskets on the line.
hooks_set	integer		Number of hooks on the line.
hooks_observed	integer		Estimated number of hooks observed, derived from haul time not observed (generally less than hooks set where 12 hours haul duration is exceeded).
light_sticks_yn	character(1)		Presence of light sticks on line (Y/N).
light_stick_type	character(1)		Type of light sticks used: 1 = Chemical, 2 = Electric, 3 = Mixture of Chemical and Electric.
avg_sticks_per_basket	integer		Average number of light sticks per basket.
snood_signal_time	smallint		The snood signal time in seconds.
line_setting_height	numeric(3,1)		Line setting height (m).
line_feed_rate	smallint		Line feeder rate in metres per second.
buoy_length	integer		Length between buoy at surface and connection to mainline below in metres.
setting_path	character(3)		3-part code for path of vessel while setting. Code detail on back of setting form.
setting_strategy	character(1)		Part one of setting path code - denotes strategy for the path of set.
setting_strategy_lookup_key	numeric(9,0)	No	System generated lookup key for setting_strategy.
setting_configuration	character(1)		Part two of setting path code - denotes physical configuration of path of set.
setting_config_lookup_key	numeric(9,0)	No	System generated lookup key for setting_configuration.
setting_turns	integer		Part three of setting path code - denotes number of turns during setting.

min_depth	integer		On current 2018+ set logs this is the minimum hook depth (m). The pre-2018 Set logs, is the expected minimum depth of the line when set in metres.
max_depth	integer		On current 2018+ set logs this is the maximum hook depth (m). The pre-2018 Set logs, is the expected maximum depth of the line when set in metres.
dist_stern_to_bait_min	smallint		Minimum distance from stern to bait entry point (m).
dist_stern_to_bait_max	smallint		Maximum distance from stern to bait entry point (m).
dist_bait_to_tori	smallint		Lateral distance from bait entry point to tori line (m).
ccamlr_tori_pole_yn	character(1)		Whether the Tori Pole used was to CCAMLR specifications (Y/N).
acoustic_bird_deterrent_yn	character(1)		Whether acoustic bird deterrents were used as a mitigation strategy for protected species captures (Y/N/U).
water_cannon_yn	character(1)		Whether water cannons were used as a mitigation strategy for protected species captures (Y/N/U).
deck_light_yn	character(1)		Whether there was unnecessary deck lighting while setting (Y/N/U).
fishing_gear_discard_yn	character(1)		Whether fishing gear was discarded (Y/N/U).
discards_during_setting	character(1)		Whether there was any offal, bait or whole fish discarded during setting.
streamer_number	integer		Number of streamers used in association with tori pole.
tori_length	integer		Length of tori line (metres).
tori_height	integer		Height of attachment of tori line above the water (metres).
line_entry_yn	character(1)		Whether the Tori line was over bait entry point. (Yes or No).
bait_stream	integer		Distance between bait landing point and tori line in metres.
bait_wake_yn	character(1)		Whether the bait was landing inside of vessel wake. From 2018 forms Did the bait enter the water within the prop wash of the vessel (Y/N).
bait_surface_distance	integer		Distance between bait landing point and vessel midline in metres.
bait_sink_distance	integer		Distance behind vessel that bait sank in metres.
cloud_cover	smallint		Percentage of cloud cover at start of the set.
barometer_reading	numeric(5,1)		Barometer reading at start of the set.
start_wind_direction	numeric(3,0)		Wind direction at start of the set (0 to 359 degrees).
start_wind_force	smallint		Wind force at start of set (Beaufort scale 0-12).
weather_code	integer		Code to identify weather conditions, an integer value between 1 and 127.
weather_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Weather Code.
bait_condition_code	character varying(4)		Whether the Bait was frozen or thawed (values F Frozen, T thawed).
bait_condition_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Bait Condition Code.
bait_thrower_used_yn	character(1)		Whether a Mechanical bait thrower was used (Y/N).

number_of_vessels	integer		The number of vessels within a 24 nautical mile radius.
number_of_longliners	integer		The number of longliners within a 24 nautical mile radius.
period_1_start	time without time zone		Start time of observation period 1.
period_1_end	time without time zone		End time of observation period 1.
period_2_start	time without time zone		Start time of observation period 2.
period_2_end	time without time zone		End time of observation period 2.
period_3_start	time without time zone		Start time of observation period 3.
period_3_end	time without time zone		End time of observation period 3.
tori_used_yn	character(1)		Indicates presence/absence of tori (bird) line/poles on the set.
port_tori_gear_code	character(2)		Gear code of tori line attached on port side of vessel.
port_tori_problem_code	character(1)		Problem code for port side tori line.
port_tori_problem_lookup_key	numeric(9,0)	No	System generated lookup key for port tori problem code.
centre_tori_gear_code	character(2)		Gear code of tori line attached on centre of vessel.
centre_tori_problem_code	character(1)		Problem code for centre tori line.
centre_tori_problem_lookup_key	numeric(9,0)	No	System generated lookup key for centre tori problem code.
stbd_tori_gear_code	character(2)		Gear code of tori line attached on starboard side of vessel.
stbd_tori_problem_code	character(1)		Problem code for starboard side tori line.
stbd_tori_problem_lookup_key	numeric(9,0)	No	System generated lookup key for starboard tori problem code.
set_observation_datetime	timestamp without time zone		Date time of observation of set details using time of observation and Set Date (if observation time is later than set start time) otherwise Set Date + 1 day
set_performance_code	integer		Performance flag for the line set: 1 = OK; 0 = Reject.
set_perform_lookup_key	numeric(9,0)	No	System generated lookup key associated with the Set Performance Code.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
event_key	numeric(9,0)	No	System generated unique key to identify an event.
set_comments	character varying(512)		Any information pertinent to the set not included in other attributes.
created_date	date	No	Date this surface lining effort was created.
updated_date	date	No	Date when this row was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.

Indexes:

"pk_x_surface_lining_effort" PRIMARY KEY, btree (fishing_event_key)

Foreign-key constraints:
"fk_x_surface_lining_effort_x_fishing_event" FOREIGN KEY (fishing_event_key)
REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
TABLE "x_haul_effort" CONSTRAINT "fk_x_haul_effort_x_sl_effort" FOREIGN KEY (fishing_event_key)
REFERENCES x_surface_lining_effort(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_lining_haul_effort" CONSTRAINT "fk_x_lining_haul_effort_x_sl_eff" FOREIGN KEY (fishing_event_key)
REFERENCES x_surface_lining_effort(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_surface_lining_bait" CONSTRAINT "fk_x_surface_lining_bait_x_sl_effort" FOREIGN KEY (fishing_event_key)
REFERENCES x_surface_lining_effort(fishing_event_key)

Table x_tori_line

Comment: Tori line details.

Column	Type	Null?	Description
tori_key	bigint	No	System generated unique key for tori line records.
trip_number	integer	No	Trip number allocated by the observer programme.
equipment_code	character varying(2)	No	Equipment code consisting of the letter T plus a number. Each tori line measured during the trip is numbered from 1 onwards.
obs1	character(5)		First initial followed by the first three letters of observers surname involved in the measurement of the device.
obs2	character(5)		As for obs 1.
measure_date	date		Date that the measurements were made.
measure_reason	character(1)		Code to explain reason this measurement was taken: I = Initial measurement D = description of the device in a Damaged state R = measurement of the device after it has been Repaired O = some Other reason for this measurement.
measure_type	character(1)		Full to indicate that this is a full record of measurements. If changes then Partial and an Equipment code (eg T1) of the device that has been altered entered.
based_on	character varying(2)		Where a Partial measurement the Equipment Code (eg T1) of the tori line that has been altered.
line_diameter	smallint		The diameter of the line used (in millimetres) rounded down to the nearest millimetre.
line_length	integer		The length of the line (in metres) rounded down to the nearest metre.
aerial_extent	integer		Aerial extent of tori line (m).
recovery_rope_yn	character(1)		Presence of tori line recovery rope (Y/N).
reference_point	character(1)		The location of the point of attachment: B= trawl block used as a reference point (trawlers), E= bait entry point used as a reference point (long liners), O= some other point used as a reference point.
reference_location	character(1)		Location of the reference point:

		P = port side S = starboard side C = central.
distance_side	numeric(3,1)	Distance from the reference point to the attachment in the port/starboard direction.
side_code	character(1)	Whether the attachment point is to port (P) or to starboard (S) of the reference point.
distance_along	numeric(3,1)	Distance from the reference point to the attachment in the forward/aft direction.
along_code	character(1)	Whether the attachment point is to forward (F) or aft (A) of the reference point.
distance_vertical	numeric(3,1)	Distance from the reference point to the attachment point in the vertical direction.
vertical_code	character(1)	Attachment point is above (A) or below (B) the reference point.
attach1_tension_release_yn	character(1)	Presence of a tension release for the attachment point (Y/N).
attach1_height	smallint	Height of attachment point above water (m).
attach1_distance	numeric(3,1)	Lateral distance (m) from centre of stern to attachment point.
attach1_port_stbd	character(1)	Port or Starboard lateral distance for attachment point measurement.
attach1_dist_stern	numeric(3,1)	Distance from stern to the attachment point (m).
attach1_adjustable_yn	character(1)	Whether attachment point is adjustable (Y/N).
attach2_tension_release_yn	character(1)	Whether dual attachment point has a tension release (Y/N).
attach2_height	smallint	Height above water (m) for dual attachment point.
attach2_distance	numeric(3,1)	Lateral distance (m) from centre of stern to dual attach point.
attach2_port_stbd	character(1)	Port or Starboard lateral distance for dual attachment point measurement.
attach2_dist_join_stern	smallint	Distance from join to stern (m).
attach2_dist_join_point	smallint	Distance from join to attachment point (m).
attach2_streamer_join_yn	character(1)	Presence of streamers between second attachment point and join (Y/N).
long_streamer_yn	character(1)	Presence of long streamers (Y/N).
long_streamer_material	character varying(8)	All long streamer material types: T = plastic Tubing, S = plastic Strapping, O = Other (describe in comments). For pre-2018 forms this is all streamer materials.
long_streamer_distance	numeric(4,2)	The maximum distance between any long streamers, in metres. For pre-2018 forms, this is maximum distance between any streamers.
long_streamer_pair_single	character(1)	Whether streamers are S= Single or P = Paired.

long_streamer_number	integer	The number of long streamers, or pairs, along the entire tori line. For pre-2018 form, this is the number of streamers.
long_streamer_max_length	numeric(4,2)	The maximum length of any long streamer attached to the tori line, in metres. For pre-2018 forms, this is maximum length of any branch of any streamer.
long_streamer_min_length	numeric(4,2)	The minimum length of any long streamer attached to the tori line, in metres. For pre-2018 forms, this is minimum length of any branch of any streamer.
long_streamer_diameter	numeric(5,2)	The minimum diameter of any long streamer on the line, in millimetres. For pre-2018 forms, this is maximum diameter of any streamer.
long_streamer_colour_code	character varying(8)	All the streamer colours observed for long streamers. For pre-2018 forms, this is for all streamers: P Pink R Red C orange (Carrot) Y Yellow G Green B Blue W broWn F Faded colour (any colour) O Other (Describe in comments).
long_streamer_dist_first	smallint	Distance to first long streamer that reaches water (m).
long_streamer_aerial_yn	character(1)	Whether long streamers cover aerial extent (Y/N).
long_streamer_touch_water_yn	character(1)	Whether all long streamers touch water surface. Defunct from Version 3 onwards.
long_streamer_height_water	numeric(3,1)	The maximum height of long streamers above the water surface (m). Defunct from Version 3 onwards.
long_streamer_num_touch_water	smallint	Number of long streamers that touch water.
light_streamer_yn	character(1)	Presence of light streamers (Y/N).
light_streamer_material	character varying(3)	All light streamer material types: T = plastic Tubing, S = plastic Strapping, O = Other (describe in comments).
light_streamer_distance	smallint	Distance between light streamers (m).
light_streamer_pair_single	character(1)	Whether light streamers are S = Single or P = Paired.
light_streamer_number	smallint	The number of light streamers, or pairs, along the entire tori line.
light_streamer_max_length	numeric(3,1)	The maximum length of any light streamer attached to the tori line, in metres.

light_streamer_min_length	numeric(3,1)		The minimum length of any light streamer attached to the tori line, in metres.
light_streamer_diameter	numeric(5,2)		The minimum diameter of any light streamer on the line, in millimetres. For pre-2018 forms, this is minimum diameter of any streamer.
light_streamer_colour_code	character(4)		All the streamer colours observed for light streamers: P Pink R Red C orange (Carrot) Y Yellow G Green B Blue W broWn F Faded colour (any colour) O Other (Describe in comments).
tow_object_yn	character(1)		Presence of towed object (Y/N).
tow_object_code	character(1)		Type of towed object: F = inverted Funnel or plastic cone L = Length of thick line K = Knot or loop of thick line B = Buoy M = Mono or mainline N = Netted buoy S = Sack or bag W = Weight Z = no towed object O = Other (specify in comments).
tow_object_size	numeric(5,2)		Size of the towed object, in metres or kg depending on type of towed object (refer to back of 2018 form for detail).
minimum_branches	smallint		The minimum number of branches on any streamer on the line.
maximum_branches	smallint		The maximum number of branches on any streamer on the line.
comments	character varying(512)		
measure_type_lookup_key	numeric(9,0)	No	System generated lookup key associated with the measure type.
reason_lookup_key	numeric(9,0)	No	System generated lookup key associated with the measure reason.
ref_point_lookup_key	numeric(9,0)	No	System generated lookup key associated with the reference point.

ref_loc_lookup_key	numeric(9,0)	No	System generated lookup key associated with the reference location.
side_lookup_key	numeric(9,0)	No	System generated lookup key associated with the side code.
along_lookup_key	numeric(9,0)	No	System generated lookup key associated with the along code.
vertical_lookup_key	numeric(9,0)	No	System generated lookup key associated with the vertical code.
tow_object_lookup_key	numeric(9,0)	No	System generated lookup key associated with the tow object.
colours_lookup_key	numeric(9,0)	No	System generated lookup key associated with the colours.
materials_lookup_key	numeric(9,0)	No	System generated lookup key associated with the materials.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.
created_date	date	No	Date when this row was created.
updated_date	date	No	Date when this row was last updated.

Indexes:
  "pk_x_tori_line" PRIMARY KEY, btree (tori_key)
  "ndx_x_tori_trip" btree (trip_number)
  "ndx_x_tori_tripkey" btree (trip_key)
Foreign-key constraints:
  "fk_x_tori_line_ref" FOREIGN KEY (trip_key) REFERENCES x_trip(trip_key)
   ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_trawl_components

Comment: Stores the codes for each groundgear component and general feature of a trawl gear system, recorded in the x_trawl_gear table, with the associated lookup key.

Column	Type	Null?	Description
trawl_gear_part_key	numeric(9,0)	No	Unique key for each trawl gear component from a trawl gear detail descriptions.
gear_equipment_code	character varying(5)	No	Gear equipment code for the trawl system.
component_type	character(1)	No	Code for the component type T = general features, G = ground gear components.
component	character(1)	No	Code for the general or ground gear feature present within the trawl system.
component_lookup_key	numeric(9,0)	No	System generated lookup key associated with the component code.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
trawl_gear_key	numeric(9,0)	No	Unique key for each trawl gear details record.
created_date	date	No	Date when this row was created.
updated_date	date	No	Date when this row was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.

Indexes:
  "pk_x_trawl_components" PRIMARY KEY, btree (trawl_gear_part_key)
  "ui_x_trawl_components" UNIQUE, btree (trip_key, gear_equipment_code, component_type, component)
Foreign-key constraints:
  "fk_x_trawl_components_ref" FOREIGN KEY (trawl_gear_key)
   REFERENCES x_trawl_gear(trawl_gear_key)

Table x_trawl_effort

Comment: Specific Trawl related fishing effort information.

Column	Type	Null?	Description
fishing_event_key	numeric(9,0)	No	System generated key of the fishing event for the trawl effort.
gear_code	character varying(5)		Net identifier e.g. BT = bottom trawl, MW = midwater.
start_net_depth	integer		Depth of the trawl net at the start of the tow in metres.
end_net_depth	integer		Depth of the trawl net at the end of the tow in metres.
surface_temperature	numeric(3,1)		Sea surface temperature (decimal degrees C).
headline_temperature	numeric(3,1)		Sea temperature at the headline (decimal degrees C).
headline_height	numeric(4,1)		Vertical opening distance of net in metres.
fishing_strategy	character(1)		Character code to identify fishing strategy, as defined by lookup. (Prior to July 2007, whether the vessel was actively targeting fish sign: 0 = No, 1 = Yes).
fishing_strategy_lookup	numeric(9,0)	No	System generated Lookup key associated with the fishing_strategy.
who_shot_net	smallint		Code to identify who shot the net, eg. 0=Fishing Master.
who_shot_net_lookup	numeric(9,0)	No	System generated Lookup key associated with the fishing_strategy (part 2), who shot net.
start_time_code	character(1)		Part 1 of start code. Who determined the start of tow information: 1 = someone on watch (vessel), 2 = observer.
tow_start_point	character(1)		Part 2 of start code. What point was identified as the start of the tow, e.g. C = brakes on.
start_point_lookup	numeric(9,0)		System generated lookup key associated with the start_point.
start_headline_depth	integer		Depth to headline at the start of tow in metres.
period_not_fishing	integer		Duration between start and end-time when net not fishing (hr and min HHMM).
end_time_code	character(1)		Part 1 of end code. Who determined the end of tow information: 1 = someone on watch (vessel), 2 = observer.
tow_end_point	character(1)		Part 2 of end code. What point was identified as the end of the tow, e.g. C = brakes off.
end_point_lookup	numeric(9,0)		System generated lookup key associated with the end_point.
end_headline_depth	integer		Depth to headline at the end of the tow in metres.

headline_tag	character(1)		A tag which identifies the source of the headline height used: 1 = headline height taken from net sonde measurements, 2 = headline height a standard figure (e.g. from net plans), 3 = headline height from skipper.
headline_tag_lookup	numeric(9,0)		System generated lookup key associated with the headline_tag.
doorspread	numeric(4,1)		The horizontal distance between the doors of the net (in metres) as measured by the door sensors.
tow_type	character(1)		Code for tow type, from part one of the fishing path: 1= bottom throughout. 2= midwater at relatively constant depth. 3= midwater in a broad range of depths. 4= mixed bottom & midwater.
tow_type_lookup	numeric(9,0)		System generated Lookup key associated with the Tow Type code.
tow_configuration	character(1)		Code for tow configuration, from part 2 of the fishing path, e.g. A = Straight line, E = Constant depth contour, etc.
tow_configuration_lookup	numeric(9,0)		System generated lookup key associated with the Tow Configuration code.
tow_turns	integer		Number of turns during the tow, from part 3 of the fishing path.
gear_events	character varying(4)		Codes to indicate that a gear event has occurred. e.g. A = Net torn, B = Net caught/fast, C = Winch failure during setting etc.
gear_events_lookup	numeric(9,0)		System generated lookup key associated with the gear_events.
net_surface_time	time without time zone		Time at which the codend of the net was first seen at the surface.
net_onboard_time	time without time zone		Time at which the net was brought on board or the first fish was emptied from the net onto the deck.
subsurface_loss	smallint		Code to identify the type of any fish loss below the surface.
subsurface_loss_lookup	numeric(9,0)	No	System generated lookup key associated with the subsurface fish loss code.
surface_loss	smallint		Code to identify the type of any fish loss at the surface or on the ramp.
surface_loss_lookup	numeric(9,0)	No	System generated lookup key associated with the surface fish loss code.
length_frequency_yn	character(1)		Whether length frequency (biological data) collected from this tow.
comment_tow	character varying(512)		Comments for the trawl station information.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date this trawl effort was created.
updated_date	date	No	Date when this trawl effort was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.

error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Comma separated short error texts for errors for the row.

Indexes:
"pk_x_trawl_effort" PRIMARY KEY, btree (fishing_event_key)
Foreign-key constraints:
"fk_x_trawl_effort_ref" FOREIGN KEY (fishing_event_key)
REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_trawl_gear

Comment: Details of each separate trawl gear system used by a vessel.

Column	Type	Null?	Description
trawl_gear_key	numeric(9,0)	No	Unique key for each trawl gear details record.
gear_equipment_code	character varying(5)		3 part gear equipment code. Part 1 - the number of trawl nets that are part of this gear. Part 2 - the type of trawl eg BT, MW, BPT or MPT. Part 3 - Sequential number identifying this piece of gear.
number_of_warps	smallint		The number warps the vessel is using.
door_spread	integer		The design Doorspread (m).
door_type	character(1)		The door type code: C = Combination door (bottom or midwater) H = High aspect door (used in midwater trawls off the bottom) L = Low aspect door (used when bottom fishing) O = Other
door_lookup_key	numeric(9,0)		System generated Lookup key associated with the door_type code.
door_area	numeric(4,2)		The door area, measured or from net plans, in square metres rounded to the nearest 0.1.
sweep_length	integer		The average length (m) of wire which connects the door to the bridle.
bridle_length	integer		The average length (m) of the top bridle.
trawl_wingless	character(1)		Y indicates that the trawl was wingless. N indicates that the trawl was winged. U could not determine.
headline_height	numeric(4,1)		The headline height that this trawl is currently designed to operate at.
headline_length	numeric(4,1)		The total length (m) of the headline.
wing_spread	integer		Wingspread (m) from the net plans unless the original value is no longer valid.
max_size_groundgear	integer		The maximum diameter (mm) of the largest structure (bobbin, disc etc) that is part of the ground gear.
number_of_codends	smallint		The number of codends that are part of this trawl system.
lengthener_mesh_size	smallint		The nominal mesh size (mm) used in the lengthener section of the net.
lengthener_mesh_config	character(1)		Lengthener mesh configuration codes: D = Diamond mesh

			H = Hexagonal mesh S = Square mesh T = T90 mesh (diamond mesh turned 90 degrees) O = Other.
lengthener_mesh_lookup_key	numeric(9,0)		System generated lookup key associated with the lengthener mesh code.
codend_mesh_size	smallint		The nominal mesh size (mm) used in the codend section of the net.
codend_mesh_config	character(1)		Codend mesh configuration codes: D = Diamond mesh H = Hexagonal mesh S = Square mesh T = T90 mesh (diamond mesh turned 90 degrees) O = Other.
codend_mesh_lookup_key	numeric(9,0)		System generated lookup key associated with the codend mesh code.
comments	character varying(512)		Any comments for the described trawl gear.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date when this row was created.
updated_date	date	No	Date when this row was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.

Indexes:
  "pk_x_trawl_gear" PRIMARY KEY, btree (trawl_gear_key)
  "ui_x_trawl_gear" UNIQUE, btree (trip_key, gear_equipment_code)
Foreign-key constraints:
  "fk_x_trawl_gear_ref" FOREIGN KEY (trip_key) REFERENCES x_trip(trip_key)
   ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
  TABLE "x_trawl_components" CONSTRAINT "fk_x_trawl_components_ref" FOREIGN KEY (trawl_gear_key)
   REFERENCES x_trawl_gear(trawl_gear_key)

Table x_trip

Comment: Header information common to a trip.

Column	Type	Null?	Description
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
trip_number	integer	No	Trip number allocated by the observer programme.
vessel_key	numeric(9,0)	No	The Ministry of Fisheries allocated key for the vessel.
obs_nation_code	character varying(6)		Nation of origin of the vessel. Can also be nation codes for charter companies.
start_date	date		Start date of the trip.
end_date	date		Finish date of the trip.
psi_interactions	character(1)		If there were protected species interactions for the trip (Y/N).
created_date	date	No	Date when this trip row was created.
updated_date	date	No	Date when this trip row was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Colon separated short error texts for errors for the row.
origin_code	character(3)		Code to identify the origin of the trip. SOP Scientific Observer Programme. HMC Hoki Management Co.

Indexes:
  "pk_x_trip" PRIMARY KEY, btree (trip_key)
  "ui_x_trip" UNIQUE, btree (trip_number)
Check constraints:
  "start_date_check" CHECK (start_date > '1986-04-01'::date)
Referenced by:
  TABLE "x_bird_baffler" CONSTRAINT "fk_x_bird_baffler_ref" FOREIGN KEY (trip_key)
   REFERENCES x_trip(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "x_bll_gear" CONSTRAINT "fk_x_bll_gear_x_trip" FOREIGN KEY (trip_key)
   REFERENCES x_trip(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "x_event" CONSTRAINT "fk_x_event_x_trip" FOREIGN KEY (trip_key)
   REFERENCES x_trip(trip_key)
  TABLE "x_fishing_effort_extra_info" CONSTRAINT "fk_x_fishin_x_trip_fi_x_trip" FOREIGN KEY (trip_key)

REFERENCES x_trip(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_fishing_gear" CONSTRAINT "fk_x_fishing_gear_ref" FOREIGN KEY (trip_key)
REFERENCES x_trip(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_processing_event" CONSTRAINT "fk_x_processing_event_ref" FOREIGN KEY (trip_key)
REFERENCES x_trip(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_setnet_gear" CONSTRAINT "fk_x_setnet_gear_ref" FOREIGN KEY (trip_key)
REFERENCES x_trip(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_sll_gear" CONSTRAINT "fk_x_sll_gear_x_trip" FOREIGN KEY (trip_key)
REFERENCES x_trip(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_tori_line" CONSTRAINT "fk_x_tori_line_ref" FOREIGN KEY (trip_key)
REFERENCES x_trip(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_trawl_gear" CONSTRAINT "fk_x_trawl_gear_ref" FOREIGN KEY (trip_key)
REFERENCES x_trip(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_trip_comments" CONSTRAINT "fk_x_trip_c_x_trip_co_x_trip" FOREIGN KEY (trip_key)
REFERENCES x_trip(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_trip_observer" CONSTRAINT "fk_x_trip_observer_ref" FOREIGN KEY (trip_key)
REFERENCES x_trip(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_troll_configuration" CONSTRAINT "fk_x_troll_configuration_ref" FOREIGN KEY (trip_key)
REFERENCES x_trip(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_warp_scarer" CONSTRAINT "fk_x_warp_scarer_ref" FOREIGN KEY (trip_key)
REFERENCES x_trip(trip_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_trip_comments

Comment: Comments relating to a trip, identified by the trip and type of comment.

Column	Type	Null?	Description
trip_comments	character varying		Comments associated with the trip.
trip_comments_type_key	numeric(9,0)	No	System Generated unique key for the Trip Comments Type.
trip_comments_key	numeric(9,0)	No	System Generated unique key for the Trip Comments.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date when this row was created.
updated_date	date	No	Date when this row was last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.

Indexes:
"pk_x_trip_comments" PRIMARY KEY, btree (trip_comments_key)
Foreign-key constraints:
"fk_x_trip_c_x_trip_co_x_trip" FOREIGN KEY (trip_key) REFERENCES x_trip(trip_key)
ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_x_trip_c_x_trip_co_x_trip_c" FOREIGN KEY (trip_comments_type_key)
REFERENCES x_trip_comments_type(trip_comments_type_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_trip_comments_type

Comment: Type code to identify the type of comments attached to the trip e.g. Station Comments, Bird Device Comments.

Column	Type	Null?	Description
trip_comments_type_key	numeric(9,0)	No	System generated unique key for the Trip Comments Type.
trip_comments_type_description	character varying(512)	No	Description of the type of comments

Indexes:
"pk_x_trip_comments_type" PRIMARY KEY, btree (trip_comments_type_key)
Referenced by:
TABLE "x_trip_comments" CONSTRAINT "fk_x_trip_c_x_trip_co_x_trip_c" FOREIGN KEY (trip_comments_type_key)
REFERENCES x_trip_comments_type(trip_comments_type_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_trip_observer

Comment: Observer details for a trip.

Column	Type	Null?	Description
trip_observer_key	integer	No	System generated key to identify the observer on a trip.
trip_number	integer	No	Trip number allocated by the observer programme.
observer_key	numeric(9,0)	No	System generated key to identify the observer.
trip_key	integer	No	System generated trip key to identify the trip.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)	No	Comma separated short error texts for errors for the row.
created_date	date		Date when this row was created.
updated_date	date		Date when this row was last updated.

Indexes:
"pk_x_trip_observer" PRIMARY KEY, btree (trip_observer_key)
"ui_x_trip_observer" UNIQUE, btree (trip_key, observer_key)
"ndx_x_obs_trip_obs_key" btree (observer_key)
"ndx_x_obs_trp" btree (trip_number)
Foreign-key constraints:
"fk_x_trip_observer__obs" FOREIGN KEY (observer_key)
REFERENCES x_ref_observer(observer_key) ON UPDATE RESTRICT ON DELETE RESTRICT
"fk_x_trip_observer_ref" FOREIGN KEY (trip_key) REFERENCES x_trip(trip_key)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_troll_configuration

Comment: Details about line configuration used on a trolling vessel for a fishing trip.

Column	Type	Null?	Description
troll_config_key	numeric(9,0)	No	System generated key to identify the troll configuration.
mainline_material	character(1)		The code for the material that the lines are made of.
mainline_material_lookup_key	numeric(9,0)		System generated Lookup key associated with the mainline material code.
mainline_diameter	smallint		The diameter of the mainlines in millimetres.
shock_absorbers	character(1)		Y if shock absorbers were used and an N if shock absorbers not used.
shock_absorber_material	character varying(40)		Material shock absorbers were made of if used.
trace_material	character(1)		The code for the material that the traces are made of.
trace_material_lookup_key	numeric(9,0)		System generated Lookup key associated with the trace material code.
trace_test	smallint		The nominal breaking strength of the line in pounds (lbs).
trace_length	integer		The average length of the traces in metres.
config_comment	character varying(512)		Any comments relating to the information recorded.
diagram_loc	character varying(22)		The location of configuration diagram.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date when this row was created.
updated_date	date		Date when this row was last updated.

Indexes:
  "pk_x_troll_configuration" PRIMARY KEY, btree (troll_config_key)
Foreign-key constraints:
  "fk_x_troll_configuration_ref" FOREIGN KEY (trip_key) REFERENCES x_trip(trip_key)
   ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_troll_effort

Comment: Specific Troll related fishing effort information.

Column	Type	Null?	Description
fishing_event_key	numeric(9,0)	No	System generated station number for each recorded troll hourly observation.
lines_fished	smallint		Number of trolling lines being fished.
wind_speed	numeric(3,1)		Wind speed in knots.
wind_direction	character varying(3)		Wind direction eg NE.
cloud_cover	smallint		Cloud cover as a fraction of 8.
surface_temperature	numeric(3,1)		Sea surface temperature from the vessel, in Celsius.
fishing_end_time	time without time zone		End of fishing time, if the last form for the date.
troll_comment	character varying(512)		Comments recorded on the Observer Trolling Hourly form.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying		Comma separated short error texts for errors for the row.
created_date	date		Date when this row was created.
updated_date	date		Date when this row was last updated.
troll_key	numeric(9,0)	No	Unique identifier for troll hourly observation

Indexes:
  "pk_x_troll_effort" PRIMARY KEY, btree (troll_key)
Foreign-key constraints:
  "fk_x_troll_effort_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_troll_heads

Comment: Details about heads used with trolling fishing gear.

Column	Type	Null?	Description
troll_head_key	numeric(9,0)	No	System generated key to identify the troll heads.
head_id	character(1)	No	Identification letter for the troll head.
head_weight	numeric(3,1)		The nominal weight of the head in ounces.
head_length	smallint		The length of the head from top to bottom (mm, rounded down to the nearest mm).
head_shape	character(1)		The code for the shape of the cross section of the head piece.
head_shape_lookup_key	numeric(9,0)		System generated Lookup key associated with the head shape code.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date when this row was created.
updated_date	date		Date when this row was last updated.

Indexes:
"pk_x_troll_heads" PRIMARY KEY, btree (troll_head_key)
Foreign-key constraints:
"fk_x_troll_heads_ref_x_troll_" FOREIGN KEY (trip_key) REFERENCES x_fishing_gear(trip_key)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_troll_hooks

Comment: Details about hooks used with trolling fishing gear.

Column	Type	Null?	Description
troll_hook_key	numeric(9,0)	No	System generated key to identify the troll hooks.
hook_id	character(1)	No	Identification letter for the hook details.
hook_size	smallint		The size of the hook opening measured from the tip of the hook across to the shaft of the hook (mm).
hook_type	character(1)		The code for the type of hook used.
hook_type_lookup_key	numeric(9,0)		System generated Lookup key associated with the hook type code.
hook_barbs	character(1)		Whether there were barbs on the hook: Y or N.
hook_material	character(1)		The code for the material the hook was made of.
hook_material_lookup_key	numeric(9,0)		System generated Lookup key associated with the hook material code.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date when this row was created.
updated_date	date		Date when this row was last updated.

Indexes:
"pk_x_troll_hooks" PRIMARY KEY, btree (troll_hook_key)
Foreign-key constraints:
"fk_x_troll_hooks_ref" FOREIGN KEY (trip_key) REFERENCES x_fishing_gear(trip_key)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_troll_skirts

Comment: Details about skirts used with trolling fishing gear.

Column	Type	Null?	Description
troll_skirt_key	numeric(9,0)	No	System generated key to identify the troll skirts.
skirt_id	character(1)	No	Identification letter for the troll skirt.
skirt_material	character(1)		Code for the troll skirt material, e.g. P = Plastic, F = Feathers, O = Other (see comments).
skirt_material_lookup_key	numeric(9,0)		System generated lookup key associated with the skirt material.
skirt_length	smallint		Length of troll skirt in mm.
skirt_description	character varying(128)		Troll skirt description including colour.
trip_key	numeric(9,0)		System generated trip key to identify the trip.
error_highest_level	smallint		The highest error level associated with the error messages for the row.
error_count	integer		The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date when this row was created.
updated_date	date		Date when this row was last updated.

Indexes:
  "pk_x_troll_skirts" PRIMARY KEY, btree (troll_skirt_key)
Foreign-key constraints:
  "fk_x_troll_skirts_ref_" FOREIGN KEY (trip_key) REFERENCES x_fishing_gear(trip_key)
   ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_vme_details

Comment: VME specific station data for the Vulnerable Marine Ecosystem Evidence Process form, variable version.

Column	Type	Null?	Description
event_key	numeric(10,0)	No	System generated key of the event for the VME effort.
vessel_master	character varying(40)		The name of the vessel master, first name followed by surname.
start_depth	integer		The groundline depth in metres at which the net reached the target depth.
end_depth	integer		The groundline depth in metres at which the net left the target depth.
person_in_charge	character varying(40)		The name of the person who signed this form if they are not the vessel master.
form_received_by_vessel_date	date		The date the person in charge received the form (New Zealand Standard Time).
form_received_by_vessel_time	time without time zone		The time the person in charge received the form (New Zealand Standard Time, 24 hour format).
comments	character varying(200)		Comments on the VME form.
trip_number	integer	No	Trip number allocated by the observer programme.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
created_date	date	No	Date when this VME row was created.
updated_date	date		Date when this VME tow details were last updated.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying	No	Separated short error texts for errors for the row.

Indexes:
"pk_x_vme_details" PRIMARY KEY, btree (event_key)
Foreign-key constraints:
"fk_x_vme_details_x_event" FOREIGN KEY (event_key) REFERENCES x_event(event_key)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_vme_limit

Comment: Vulnerable Marine Ecosystem Evidence Process, weight and threshold limits per form version.

Column	Type	Null?	Description
species	character(3)	No	Species code as printed on the VME form.
form_version	character varying(20)	No	Version of the VME form.
threshold_limit_weight	numeric(6,2)		Threshold limit weight in kg as printed on the VME form (specific to this form version).
weight_limit_weight	numeric(6,2)		Weight limit in kg as printed on the VME form (specific to this form version).

Indexes:
"pk_x_vme_limit" PRIMARY KEY, btree (species, form_version)

Table x_warp_scarer

Comment: Warp scarer details.

Column	Type	Null?	Description
wpsr_key	numeric(9,0)	No	Warp scarer key.
trip_number	integer	No	Trip number allocated by the observer programme.
equipment_code	character varying(3)	No	Equipment code consisting of the letter W plus a number. Each warp scarer measured during the trip is numbered from 1 onwards.
obs1	character(5)		First initial followed by the first three letters of observers surname involved in measuring the warp scarer.
obs2	character(5)		As for obs 1
measure_date	date		Date that the measurements were made.
measure_reason	character(1)		Code to explain why this measurement was taken: I = Initial measurement for this warp scarer D = description of the warp scarer in a Damaged state R = measurement of the warp scarer after it has been Repaired O = there is some Other reason for this measurement.
reason_lookup_key	numeric(9,0)		System generated lookup key associated with the measure reason.
measure_type	character varying(3)		Full (F) to indicate that this is a full record of measurements or Partial (P) for a Warp Scarer that has a full measurement and then been altered.
measure_type_lookup_key	numeric(9,0)		System generated lookup key associated with the measure type.
based_on	character varying(3)		Where a Partial measurement the Equipment Code (eg W1) of the Warp Scarer that has been altered.
attachment_point	character(1)		The location of the point of attachment: P = Port side warp, S = Starboard side warp, C = Central warp, O = some other point used as a reference point.
attachment_lookup_key	numeric(9,0)		System generated lookup key associated with the attachment point.
mainline_diameter	smallint		The diameter of the mainline used (in millimetres) rounded down to the nearest millimetre.

tow_object	character(1)	Type of towed object: A = Chain C = Clip D = Shackle F = inverted funnel or plastic cone L = length of thick line K = knot or loop of thick line B = buoy N = netted buoy H = Hook W = weight Z = no towed object O = other type of towed object
tow_object_lookup_key	numeric(9,0)	System generated lookup key associated with the towed object.
object_weight	numeric(4,2)	Weight of the towed object in kilograms.
connector_type	character(1)	Type of connector eg C = Clip, D = D Shackle, H = Hook.
connector_lookup_key	numeric(9,0)	System generated lookup key associated with the connector type.
connector_number	smallint	The number of connectors holding main line to warp.
streamer_number	smallint	Number of streamers.
streamer_max_gap	numeric(4,2)	The largest gap from one streamer to the next, in metres.
streamer_min_branches	smallint	The minimum number of branches on any streamer on the line.
streamer_max_branches	smallint	The maximum number of branches on any streamer on the line.
streamer_min_length	numeric(4,2)	The minimum length of any branch of any streamer on the line, in metres.
streamer_max_length	numeric(4,2)	The maximum length of any branch of any streamer on the line, in metres.
streamer_min_dia	numeric(4,2)	The minimum diameter of any branch of any streamer on the line, in millimetres.
streamer_max_dia	numeric(4,2)	The maximum diameter of any branch of any streamer on the line, in millimetres.
extent_distance	numeric(3,1)	Estimate of the extent (distance) or coverage of the warp scarer.
material_max_gap	smallint	Maximum gap visible in materials.
mainline_visible_min_lgth	smallint	Minimum length of the main line visible material, in millimetres.
mainline_visible_max_lgth	smallint	Maximum length of the main line visible material, in millimetres.
colours	character varying(8)	All the different streamer colours observed:

		P pink R red C carrot (orange) Y yellow G green B blue W brown F faded colour (any colour) O other
colours_lookup_key	numeric(9,0)	System generated lookup key associated with the colours.
materials	character varying(8)	Code for all the different streamer materials observed: T plastic tubing S plastic strapping O other
materials_lookup_key	numeric(9,0)	System generated lookup key associated with the materials.
comments	character varying(300)	Comments
trip_key	numeric(9,0)	System generated trip key to identify the trip.
error_highest_level	smallint	The highest error level associated with the error messages for the row.
error_count	smallint	The number of error messages for the row.
error_text	character varying(312)	Comma separated short error texts for errors for the row.
created_date	date	Date when this row was created.
updated_date	date	Date when this row was last updated.

Indexes:
"pk_x_warp_scarer" PRIMARY KEY, btree (wpsr_key)
Foreign-key constraints:
"fk_x_warp_scarer_ref" FOREIGN KEY (trip_key) REFERENCES x_trip(trip_key)
ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_warp_strike

Comment: Seabird warp-strike observations (trawl) - Fishing event descriptors.

Column	Type	Null?	Description
fishing_event_key	numeric(10,0)	No	System generated key of the fishing event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	Sequential number for each station (tow).
tcepr_number	integer		TCEPR form number for the tow.
tcepr_tow	smallint		Shot number on the TCEPR form.
tow_date	date		Date at start of the tow.
tow_start_time	time without time zone		Start time of the tow.
time_code	character(2)		Time code as defined in the observer catch effort logbook instructions.
time_code_lookup_key	numeric(9,0)		Key to link to lookup table to describe time code used.
meal_plant	character(1)		Meal plant onboard the vessel (Y or N).
meal_plant_on	character(1)		Meal plant running during the tow (Y or N).
percent_observed	smallint		The percentage of pound emptying observed.
comments_tow	character varying(560)		Comment for the tow or relating to a sampling period that was not sampled.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date when this row was created.
updated_date	date		Date when this row was last updated.

Indexes:
  "pk_x_warp_strike" PRIMARY KEY, btree (fishing_event_key)
  "ndx_x_warpstrike_trp_stn" UNIQUE, btree (trip_number, station_number)
Foreign-key constraints:
  "fk_x_warp_strike_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES x_fishing_event(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
  TABLE "x_warp_strike_sample" CONSTRAINT "fk_x_warp_strike_sample_ref" FOREIGN KEY (fishing_event_key)

REFERENCES x_warp_strike(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
TABLE "x_warp_strike_capture" CONSTRAINT "fk_x_warpstrike_capture_x_warp_strike" FOREIGN KEY (fishing_event_key)
REFERENCES x_warp_strike(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_warp_strike_capture

Comment: Numbers of seabirds recovered from the whole tow.

Column	Type	Null?	Description
bird_capture_key	numeric(10,0)	No	System generated primary key to identify bird capture records.
fishing_event_key	numeric(10,0)	No	System generated key of the fishing event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
recov_from	character(1)		Code for where birds were recovered from, W = Warp, N = Net, M = Mitigation device, U = Unknown.
recov_from_lookup_key	numeric(9,0)	No	Key to link to lookup table to describe recov_from code.
status	character(1)		Code for status: D = dead, I = injured, A = non injured, U = Unknown when no observation was made.
status_lookup_key	numeric(9,0)	No	Key to link to lookup table to describe status code.
size	character(1)		Code for bird size: L = Large, S = Small, N = Not recorded (pre 18/01/2006 forms).
size_lookup_key	numeric(9,0)	No	Key to link to lookup table to describe size code.
bird_count	smallint		Number of birds recovered.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date when this row was created.
updated_date	date		Date when this row was last updated.

Indexes:
  "pk_x_warp_strike_capture" PRIMARY KEY, btree (bird_capture_key)
  "ndx_x_warp_strike_capt_stn" btree (fishing_event_key)
Foreign-key constraints:
  "fk_x_warpstrike_capture_x_warp_strike" FOREIGN KEY (fishing_event_key)
   REFERENCES x_warp_strike(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_warp_strike_device

Comment: Details of any mitigation devices or methods used during an observation sampling period.

Column	Type	Null?	Description
warpstrike_device_key	numeric(10,0)	No	System generated key of the warp strike device.
warpstrike_sample_key	numeric(10,0)	No	System generated key of the warp strike sample.
device_type	character varying(3)		Device type code.
device_length	integer		Length parameter of the device.
device_height	integer		Height parameter of the device.
streamers	integer		Number of streamers.
device_complete	character(1)		Device complete flag, Y = Yes, N = No, U = Unknown.
deploy_sides	character(1)		Sides device deployed on, P = Port, S = Starboard, B = Both, N = Neither.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
fishing_event_key	numeric(9,0)	No	System generated key of the fishing event.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date when this row was created.
updated_date	date		Date when this row was last updated.

Indexes:
  "pk_x_warp_strike_devices" PRIMARY KEY, btree (warpstrike_device_key)
Foreign-key constraints:
  "fk_x_mitigation_description" FOREIGN KEY (device_type)
   REFERENCES x_mitigation_description(device_type) ON UPDATE RESTRICT ON DELETE RESTRICT
  "fk_x_warp_strike_device_ref" FOREIGN KEY (warpstrike_sample_key)
   REFERENCES x_warp_strike_sample(warpstrike_sample_key) ON UPDATE RESTRICT ON DELETE RESTRICT

Table x_warp_strike_sample

Comment: Fifteen minute seabird warp/mitigation device strike observations and bird abundance data.

Column	Type	Null?	Description
warpstrike_sample_key	numeric(10,0)	No	System generated key of the warp strike sample.
fishing_event_key	numeric(10,0)	No	System generated key of the fishing event.
trip_key	numeric(9,0)	No	System generated trip key to identify the trip.
trip_number	integer	No	Trip number allocated by the observer programme.
station_number	integer	No	Sequential number for each station (tow).
sample_number	smallint	No	Sampling period number for the tow.
side_observed	character(1)		Which warp or side was observed during the observation period, P=Port, S=Starboard, C=Central.
side_observed_lookup_key	numeric(9,0)		Key to link to lookup table to describe side_observed code.
warp_or_device_observed	character(2)		Code for trawl warp (TW) or mitigation device (MD) or both (TM) observed during the sampling period.
observed_lookup_key	numeric(9,0)		Key to link to lookup table to describe warp_or_device_observed code.
large_birds	integer		The large bird abundance count just before the sampling period.
small_birds	integer		The small bird abundance count just before the sampling period.
large_range	smallint		Code for range of large bird abundance for sampling period number 0 = 0, 1 = 1-9, 2 = 10-100, 3 = >100.
small_range	smallint		Code for range of small bird abundance for sampling period number 0 = 0, 1 = 1-9, 2 = 10-100, 3 = >100.
time_start	time without time zone		Start time for the sampling period.
time_end	time without time zone		End time for the sampling period.
contacts_large	smallint		Number of large birds coming into heavy contact with the observed trawl warp (or mitigation device) during the sampling period.
contacts_small	smallint		Number of small birds coming into heavy contact with the observed trawl warp (or mitigation device) during the sampling period.
sprags_port	character(1)		Sprags on the port side warp, Y = Yes, N = No, U = Unknown.
sprags_starboard	character(1)		Sprags on the starboard side warp, Y = Yes, N = No, U = Unknown.
grease	character(1)		Grease on warps, P = Port, S = Starboard, B = Both, N = Neither/None.

swell_ht	numeric(3,2)		Swell height (m).
swell_dir	smallint		Swell direction, in 12 point "clock scale". The bow of the vessel is defined as 12, the stern 6 etc.
wind_speed	smallint		Wind speed on the beaufort scale.
wind_speed_lookup_key	numeric(9,0)		System generated lookup key associated with the wind_speed.
wind_dir	smallint		Wind direction, in 12 point "clock scale". The bow of the vessel is defined as 12, the stern 6 etc.
discharge_side	character(1)		Discharge side for offal, P=Port, S=Starboard, B=Both, N=Neither.
discharge_side_lookup_key	numeric(9,0)		System generated lookup key associated with the discharge side.
discharge_rate	character(1)		Rate of offal or discard discharge, 0 = none, 1 = negligible, 2 = intermittent, 3 = continuous.
discharge_rate_lookup_key	numeric(9,0)		System generated lookup key associated with the discharge rate.
discharge_type	character varying(5)		Type of discharges, S = Sump water, M = Minced & macerated, C = Cutter pump, O = Offal meaning heads and guts, D = Discards of whole fish.
discharge_type_lookup_key	numeric(9,0)		System generated lookup key associated with the discharge type.
obs_initials	character(2)		Observers initials.
comments	character varying(600)		Comments for the sampling period.
error_highest_level	smallint	No	The highest error level associated with the error messages for the row.
error_count	integer	No	The number of error messages for the row.
error_text	character varying(512)		Comma separated short error texts for errors for the row.
created_date	date		Date when this row was created.
updated_date	date		Date when this row was last updated.

Indexes:
  "pk_x_warp_strike_sample" PRIMARY KEY, btree (warpstrike_sample_key)
  "ndx_x_warp_strike_sample" UNIQUE, btree (trip_number, station_number, sample_number)
Foreign-key constraints:
  "fk_x_warp_strike_sample_ref" FOREIGN KEY (fishing_event_key)
   REFERENCES x_warp_strike(fishing_event_key) ON UPDATE RESTRICT ON DELETE RESTRICT
Referenced by:
  TABLE "x_mitigation_event" CONSTRAINT "fk_x_mitigation_events_ref" FOREIGN KEY (warpstrike_sample_key)
   REFERENCES x_warp_strike_sample(warpstrike_sample_key) ON UPDATE RESTRICT ON DELETE RESTRICT
  TABLE "x_warp_strike_device" CONSTRAINT "fk_x_warp_strike_device_ref" FOREIGN KEY (warpstrike_sample_key)
   REFERENCES x_warp_strike_sample(warpstrike_sample_key) ON UPDATE RESTRICT ON DELETE RESTRICT

6 Database views

6.1 View 1: v_station

Comment: View of station data joining tables x_event and x_fishing_event, providing truncated position data.

Column	Type
event_key	numeric(10,0)
event_start_date	date
event_end_date	date
event_start_time	time without time zone
event_end_time	time without time zone
fishing_year	character(7)
trunc_start_latitude	numeric(3,1)
trunc_start_longitude	numeric(4,1)
trunc_end_latitude	numeric(3,1)
trunc_end_longitude	numeric(4,1)
start_obs_fma	character varying(5)
end_obs_fma	character varying(5)
start_stats_area	character varying(4)
end_stats_area	character varying(4)
vessel_key	numeric(9,0)
trip_key	numeric(9,0)
event_type_key	numeric(9,0)
created_date	date
updated_date	date
error_highest_level	smallint
error_count	integer
error_text	character varying(512)
trip_number	integer
station_number	integer
fishing_event_key	numeric(9,0)
target_species	character(3)
fishing_method	character(3)
sequence_number	integer
total_onboard_greenweight	integer
gw_onboard_part1_lookup	numeric(9,0)
gw_onboard_part2_lookup	numeric(9,0)
gw_onboard_part3_lookup	numeric(9,0)
total_surface_greenweight	integer
gw_surface_part1_lookup	numeric(9,0)
gw_surface_part2_lookup	numeric(9,0)
gw_surface_part3_lookup	numeric(9,0)
start_seabed_depth	integer
end_seabed_depth	integer
fishing_speed	numeric(3,1)
greenweight_method	character(4)
greenwt_method_code_lookup	numeric(9,0)
shot_offal_discharge	character(1)

shot_offal_lookup	numeric(9,0)
shot_fish_discharge	character(1)
shot_fish_lookup	numeric(9,0)
beaufort_scale	character(2)
beaufort_scale_lookup	numeric(9,0)
tow_offal_discharge	character(1)
tow_offal_lookup	numeric(9,0)
tow_fish_discharge	character(1)
tow_fish_lookup	numeric(9,0)
haul_offal_discharge	character(1)
haul_offal_lookup	numeric(9,0)
haul_fish_discharge	character(1)
haul_fish_lookup	numeric(9,0)
mitigation_equipment	character varying(12)
mitigation_events	character varying(12)
mitigation_event_lookup	numeric(9,0)
nonfish_bycatch	character(1)
benthic_material	character(1)
comment_catch_weight	character varying(512)
observed_yn	character(1)
ce_fishing_event_key	character varying(12)

View definition:

```
SELECT e.event_key, e.event_start_date, e.event_end_date, e.event_start_time,
e.event_end_time, e.fishing_year, e.trunc_start_latitude, e.trunc_start_longitude,
e.trunc_end_latitude, e.trunc_end_longitude, e.start_obs_fma, e.end_obs_fma,
e.start_stats_area, e.end_stats_area, e.vessel_key, e.trip_key, e.event_type_key, e.created_date,
e.updated_date, e.error_highest_level, e.error_count, e.error_text, e.trip_number,
f.station_number, f.fishing_event_key, f.target_species, f.fishing_method, f.sequence_number,
f.total_onboard_greenweight, f.gw_onboard_part1_lookup_key AS gw_onboard_part1_lookup,
f.gw_onboard_part2_lookup_key AS gw_onboard_part2_lookup,
f.gw_onboard_part3_lookup_key AS gw_onboard_part3_lookup, f.total_surface_greenweight,
f.gw_surface_part1_lookup_key AS gw_surface_part1_lookup,
f.gw_surface_part2_lookup_key AS gw_surface_part2_lookup,
f.gw_surface_part3_lookup_key AS gw_surface_part3_lookup, f.start_seabed_depth,
f.end_seabed_depth, f.fishing_speed, f.greenweight_method,
f.greenwt_method_code_lookup_key AS greenwt_method_code_lookup,
f.shot_offal_discharge, f.shot_offal_lookup_key AS shot_offal_lookup, f.shot_fish_discharge,
f.shot_fish_lookup_key AS shot_fish_lookup, f.beaufort_scale, f.beaufort_scale_lookup_key
AS beaufort_scale_lookup, f.tow_offal_discharge, f.tow_offal_lookup_key AS
tow_offal_lookup, f.tow_fish_discharge, f.tow_fish_lookup_key AS tow_fish_lookup,
f.haul_offal_discharge, f.haul_offal_lookup_key AS haul_offal_lookup, f.haul_fish_discharge,
f.haul_fish_lookup_key AS haul_fish_lookup, f.mitigation_equipment, f.mitigation_events,
f.mitigation_event_lookup_key AS mitigation_event_lookup, f.nonfish_bycatch,
f.benthic_material, f.comment_catch_weight, f.observed_yn, f.ce_fishing_event_key
 FROM x_event e, x_fishing_event f
 WHERE e.event_key = f.event_key ;
```

See table listings above for comments on columns for this view.

7 Business rules

7.1 Introduction to business rules

The following are a list of business rules applying to the **cod** database. A business rule is a written statement specifying what the information system must do or how it must be structured. In this instance the information system is any system that is designed to handle observer data.

There are three recognised types of business rules:

Fact	Certainty or an existence in the information system.
Formula	Calculation employed in the information system.
Validation	Constraint on a value in the information system.

Fact rules are shown on the ERD by the cardinality; e.g., one-to-many, of table relationships. Formula and Validation rules are implemented by referential constraints, range checks, and algorithms both in the database and during validation.

Validation rules may be part of the preloading checks on the data as opposed to constraints or checks imposed by the database. These rules sometimes state that a value should be within a certain range. All such rules containing the word ‘should’ are conducted by preloading software. The use of the word ‘should’ in relation to these validation checks means that a warning message is generated when a value falls outside this range and the data are then checked further in relation to this value. Hence in a small number of cases values may legitimately be outside the range of business rules containing the word ‘should’.

Generally few business rules are applied to the load tables, as these tables are designed to capture the data as entered, either by the observer or by shore based data entry staff.
The business rules below refer (mostly) to the stage schema tables which is where validation takes place in the cod model. All data has to go via the stage tables before being inserted into the report tables so data in the report tables should satisfy the corresponding business rules.
The exception to the specification to the business rules to the stage tables below is at the station level for trawl data where there are multiple station data tables depending on the age and origin of the data, so to capture the rules across all datasets at this level the rules have been applied to the report tables, namely x_event, x_fishing_event and x_trawl_effort tables.

7.2 Summary of rules

Observer trip record (y_observer_trip_master)

trip_number Must be a unique integer.

trip_key Must be a unique integer.

vessel_key Must be a valid vessel key of the vessel observed.

start_date The start date of the trip must be a legitimate date and should be within the specified period the data set covers.

end_date The finish date of the trip must be a legitimate date and should be within the specified period the data set covers.

Multiple column checks on date:
The start date should not be later than the finish date. The dates should be within a period of six weeks of each other.

origin_code Should be a valid origin code as listed in Appendix 1.

Observer trip comment record (y_observer_trip_comment)

trip_number Must be a unique integer and must be equal to a trip key as listed in the *y_observer_trip_master* table.

Event record (x_event)

trip_key	Must be equal to a trip key held in the *x_trip* table.
event_key	Must be a unique integer within all event records.
event_start_date	The start date of the event must be a legitimate date. **Multiple column checks on event start date, trip start date and trip finish date**: The event start date should fall within the range of the trip start and finish dates. The event start date should be sequential between stations, for a given trip.
event_end_date	The end date of the event must be a legitimate date. **Multiple column checks on event end date, trip start date and trip finish date**: The event end date should fall within the range of the trip start and finish dates. The event end date should be sequential between stations, for a given trip.
event_start_time	Event start time must be a valid 24-hour time of between 0000 - 2359.
event_end_time	Event end time must be a valid 24-hour time of between 0000 - 2359. **Multiple column checks on event start date/time and event finish date/time**: The event finish date/time must not be before the event start date/time. The finish date/start must be before the start date/time of any subsequent events.
vessel_key	Vessel key must have a value and should be a valid vessel key of the vessel observed.
decimal_start_latitude	Must be a valid latitude and should fall within the range of - 33 to 56 except for Bottom Longline vessels targeting toothfish species, that may fish down to 78 South..
decimal_start_longitude	Must be a valid longitude and should fall within the range of 164 to 190.
decimal_end_latitude	Must be a valid latitude and should fall within the range of - 33 to 56 except for Bottom Longline vessels targeting toothfish species, that may fish down to 78 South..
decimal_end_longitude	Must be a valid longitude and should fall within the range of 164 to 190.

start_obs_fma	Should be a valid Fisheries Management Area code for the New Zealand Exclusive Economic Zone (EEZ), or a valid research area code for areas outside the EEZ.
end_obs_fma	Should be a valid Fisheries Management Area code for the New Zealand Exclusive Economic Zone (EEZ), or a valid research area code for areas outside the EEZ.
start_latitude	Latitude at start in degrees and minutes, should be a valid latitude and degrees should fall within the range of 33 - 48 South, except for Bottom Longline vessels targeting toothfish species, that may fish down to 78 South.
start_nth_sth	Latitude North or South at start should be either 'S' or 'N' where start latitude has a value.
start_longitude	Longitude at start in degrees and minutes, should be a valid longitude and degrees should fall within the reasonable range of 164 East to 170 West.
start_east_west	Longitude East or West at start, should be either "E" or "W" where start longitude has a value.
end_latitude	Latitude at finish in degrees and minutes, should be a valid latitude and degrees should fall within the range of 33 - 48 South, except for Bottom Longline vessels targeting toothfish species, that may fish down to 78 South.
end_nth_sth	Latitude North or South at finish must be either 'S' or 'N' where end latitude has a value.
end_longitude	Longitude at finish in degrees and minutes, should be a valid longitude and degrees should fall within the reasonable range of 164 East to 170 West.
end_east_west	Longitude East or West at finish, should be either "E" or "W" where end longitude has a value.
	Multiple column checks on event start and finish positions: The start and finish positions should be within a defined maximum distance. The validation parameter for the distance between positions is set at 25 nautical miles. The time elapsed between the start and the finish of the event is taken into account on validation. The distance between events must be within a distance that could be covered by the vessel in the elapsed time period between events. The validation parameter is set at 15 knots for this check. Note, for drop lines, the end of the line set is not required as it is equal to the start position.

Fishing event record (x_fishing_event) – more station type data

fishing_event_key	Must have a value that is unique within this table.
event_key	Must have a value, and this value be equal to a value in table x_event.
target_sp	Should be a valid species code as listed in the table x_species.
start_bottom_depth	Bottom depth at start, should fall within the range of 10 – 2000 meters.
end_bottom_depth	Bottom depth at finish, should fall within the range of 10 – 2000 meters.
fishing_method	Fishing method must have a value and must be a valid fishing code in table x_fishing_method and as listed in Appendix 1.
fishing_speed	Speed should fall within the reasonable range of 1.0 – 6.0 knots.

Observer trawl record (x_trawl_effort)

fishing_event_key	Must have a value that is unique within this table, and this value be equal to a value in table x_event.
headline_height	The headline height should fall within the reasonable range of 10 – 120 meters.
start_net_depth	Net depth at start, should fall within the reasonable range of 10 – 2000 meters.
end_net_depth	Net depth at finish, should fall within the reasonable range of 10 – 2000 meters.
surface_temperature	Sea surface temperature should be in the range 8.0 to 24.0 degrees Celsius.
headline_temperature	Temperature at the headline of the net should be in the range of 4.0 to 15.5 degrees Celsius.

Observer bottom long line record (y_bll_line)

Multiple column checks on trip number and station number:
The combination of trip number and station number must be unique and must exist in the *y_lfs_station* table.

fishing_event_key Must have a value that is a unique number within this table.

trip_key Must have a value and the value should be equal to a value in table *x_trip*.

topography_code Bottom contour code should be a valid bottom type code as listed in Appendix 1.

hooks_number The number of hooks should fall within the range of 10 – 15000.

bait1_species Should be a valid species code as listed in the *x_species* table.

bait2_species Should be a valid species code as listed in the *x_species* table.

percent_baited_percentage Percent baited must be a value within the range 0>= - <=100.

length_frequency_taken_yn Length frequency flag must be equal to “Y” or “N” or NULL and should be equal to only “Y” or “N”.

hooks_lost_number The number of hooks lost must be a number greater than or equal to zero.

Multiple column checks on number of hooks set and number of hooks lost:
The number of hooks lost should not exceed the number of hooks set.

catch_assessment_code Should be a valid catch assessment code as listed in Appendix 1.

Observer Purseseine record (x_purseseine_effort)

fishing_event_key	Must have a value that is unique within this table, and this value be equal to a value in table x_event.
trip_key	Must have a value, and the value should be equal to a value in table *x_trip*.
trip_number	Must have a value, and the value should be equal to a value in table *x_trip*.
begin_purse	Time start pursing must be a valid 24-hour time between 0000 - 2359.
end_purse	Time end pursing must be a valid 24-hour time between 0000 - 2359.
net_rolling	Time start net rolling must be a valid 24-hour time between 0000 - 2359.
net_sacking	Time start net sacking must be a valid 24-hour time between 0000 - 2359.
end_brail	Time end brailing must be a valid 24-hour time between 0000 - 2359.
beaufort	Sea state on Beaufort scale, must be in the range 0 - 12, as listed in Appendix 1.
sea_temperature	Sea surface temperature should be in the range 8.0 to 24.0 degrees Celsius.

Observer catch record (y_lfs_catch)

	Multiple column checks on trip number and station number: The combination of trip number and station number must exist in the *y_lfs_station* table.
fishing_event_catch_key	Must have a value that is a unique number within this table.
species	Should be a valid species code as listed in the *x_species* table.
discard_status_code	Should be a valid code, indicating discard status, as listed in Appendix 1.
catch_weight	Should be a number greater than zero.
no_fish	Should be a number greater than zero.
w_meth	Weight method code, consists of two parts; Part 1: a numeric code for the device used to weigh fish, Part 2: an Alpha to indicate method used to analyse the total catch. e.g. 1K means used Salter scales (1) and weighted in full (K). Each part should be a valid code as listed in Appendix 1, Catch weight method codes.

Observer catch sampling record (y_lfs_general_catch_sample)

Multiple column checks on trip number and tow number:
The combination of trip number and tow number should exist in the corresponding station table as trip number and station number.

species Should be a valid species code as listed in the *x_species* table.

catch_weight Should be a number greater than zero.

sample_weight Should be a number greater than zero.

Multiple column checks on catch and sample weights:
Sample weight should be less than or equal to the catch weight.

sample_weight_method_code Code for method used to weigh sample of fish, should be a valid weight code as listed in Appendix 1.

catch_weight_method_code Catch weight method code, must be a valid code combining two parts.
Part 1: the location of the catch at the time of analysis.
Part 2: an Alpha character to indicate method used to analyse the total catch.
e,g. means 7K analysis in processing area (7) and weighted in full (K).
This code must compile the codes listed in Appendix 1.

Observer length frequency record (y_lfs_length_frequency)

	Multiple column checks on trip number, station number, species and length: The combination of trip number, station number, species and length must be unique. **Multiple column checks on trip number, station number and species code:** The combination of trip number, station number and species code should exit in the *y_lfs_general_catch_sample* table.
species	Should be a valid species code as listed in the *x_species* table.
length_measure_code	Should be a valid code as held in *t_fish_meas_codes* table in the **rdb** database, of which a subset are listed in Appendix 1.
length	Should be a number greater than zero and be a length within the range for the given species of fish, as held in the validation routines definition file.
male_number } **female_number}**	Must be a valid integer 0 or greater.
total_fish }	**Mulitple columns check on *length, male_number, female_number* and *total_fish*:** The number in total_fish should be equal to or greater than the sum of male_number and female_number for any given length.
female_stage1} **female_stage2}** **female_stage3}** **female_stage4}**	Should be a valid integer greater than 0.
female_stage5}	**Multiple column check on number of female gonad stages and the total number of females:** The sum of all staged females should not exceed the total females for a given length for that sample of fish.
male_stage1} **male_stage2}** **male_stage3}** **male_stage4}**	Should be a valid integer greater than 0.
male_stage5}	**Multiple column check on number of male gonad stages and the total number of males:** The sum of all staged males should not exceed the total males for a given length for that sample of fish.

Observer nonfish station record (y_nfb_nonfish_station)

trip_number	The trip number must exist in table y_observer_trip_master. **Multiple column checks on trip number, tow number and caught time:** The combination of trip number, tow number and caught time must be unique.
caught_time	Time caught should be a valid 24-hour time between 0000 and 2359.
caught_latitude	Must be a valid latitude and should fall within the reasonable range of 33 - 38 South.
caught_longitude	Must be a valid longitude and should fall within the reasonable range of 164 East to 170 West.
caught_east_west	Longitude East or West caught, where recorded, must be either "E" or "W". **Multiple column checks on time and position caught**: The time and position caught (if known), should fall within the start & finish time and positions recorded for the station record, in the corresponding station table.
wingspread	Distance between trawl wings should be between 20 - 300 meters.
gear_depth	Depth of gear should fall within the reasonable range of 10 – 2000 meters.
wind_knots	Must be a number greater than zero and should not exceed 0 - 70 knots.
wind_direction	Wind direction (degrees) should be in the range 0 to 359 from true north.
sea_state_beaufort	Sea state on Beaufort scale, must be in the range 0 - 12, as listed in Appendix 1.
cloud_cover	Cloud cover in eighths, must be in the range 0 to 8.
offal_discard	Offal discarding code should be a valid code as listed in Appendix 1.
tori_pole_yn	Tori pole active code should be a valid code as listed in Appendix 1, ‘0’or’1’.
bird_device_yn	Bird scaring device used code, must be “0” or “1”.
gear_event_yn	Should be equal to “0” or “1”.
surface_temperature	Sea surface temperature, should not exceed 23 degrees Celsius.

headline_temperature Sea temperature at headline, should not exceed 20 degrees Celsius.

tow_type Must be a valid tow type code as listed in Appendix 1.

tow_configuration Should be a valid tow configuration code as listed in Appendix 1.

tow_turns The number of turns during the tow, should be in range 0 to 9.

bycatch_incident_key Must have a value that is a unique number within this table.

Observer Nonfish Bycatch Record (y_nfb_nonfish_catch)

Multiple column checks on trip number, tow number and time caught: The combination of trip number, tow number and time caught must exist in the *y_nfb_nonfish_station* table.

specimen_no Number of the species in the tow, must be unique for this species within tow.

species}
species_obs} Should be a valid species code as listed in the *x_species* table.

length Should be a number within a the range for the species, as listed in the non-fish lengths in Appendix 1.

girth Must be a number greater than zero and should be in the range 60 – 1750.

blubber_mm Must be a number greater than zero and should be in the range 5 – 80.

sex}
sex_obs} Must be a valid sex code (non-fish) as listed in Appendix 1.

alive_code Should be a valid status code as listed in Appendix 1.

marked_code Should be a valid marked code as listed in Appendix 1.

whole_kept_yn }
head_yn }
leg_yn }
ovary_yn }
stomach_yn }
teeth_yn }
skin_yn }
blubber_yn }
muscle_yn }
other_sample_yn } Should be equal to either a “0” or “1”.

Biological data for individual squid (y_lfs_fish_biological)

fishing_event_bio_key	The fish biological table key should be unique.
species	Should be a valid species code as listed in the *x_species* table.
fish_number	Must be a number greater than zero and unique for the combination of trip_number, tow_number and species.
fish_sex_code	Should be a valid sex code (non-fish) as listed in Appendix 1.
copulated code_yn	For females only - Must be either 0 (not copulated) or 1 = (copulated).
fish_length	Dorsal mantle length (DML) for squid should be in the range 5 to 50 cm, or length of fish should be less than or equal to the maximum length in the table x_species

Technical specifications of squid jiggers (z_jig_specs)

Multiple column checks on fishing year and call sign:
The combination of fishing year and call sign must be unique.

Seabird Warp-Strike Observations (Trawl) record (y_warp_strike)

fishing_event_key Must have a value and must be unique within this table.

trip_key Must be equal to a value in the *y_observer_trip_master* table.

trip_number Should be equal to a trip number held in the *y_observer_trip_master* table.

station_number Must be a unique integer within all records, for a given trip number.

tow_date The start date of the station must be a legitimate date.

Multiple column checks on tow start date, trip start date and trip finish date:
The tow start date should fall within the range of the trip start and finish dates.
The tow start date should be sequential between stations, for a given trip.

tow_start_time Tow start time must be a valid 24-hour time of between 0000 - 2359.

meal_plant Meal plant on vessel, must be 'Y' or 'N'.

meal_plant_on Meal plant running during tow, must be 'Y' or 'N'.

Seabird Warp-Strike Sampling Period record (y_ warp_strike_sample)

fishing_event_key fishing_event_key must equal a fishing_event_key held in the t_warp_strike table.

Multiple column checks on trip number and station number and sample number:
The combination of trip number, station number and sample number must be unique.

time_start Tow start time must be a valid 24-hour time of between 0000 - 2359.

time_end Tow end time must be a valid 24-hour time of between 0000 - 2359.

large_range Code for range large bird abundance must be between 0 – 3.

small_range Code for range small bird abundance must be between 0 - 3.

sprags_port Sprags on port warp must be "Y", "N" or "U".

sprags_starboard Sprags on starboard warp must be "Y", "N" or "U".

grease Grease on warps must be "P", "S", "B", or "N".

swell_dir Swell direction should be between 1 – 12.

wind_spd	Wind speed on Beaufort scale should be between 0 -12
wind_dir	Wind direction should be between 1 - 12
discharge_side	Discharge side code should be a valid code as listed in Appendix 1.
discharge_rate	Discharge rate code should be a valid code as listed in Appendix 1.
discharge_type	Discharge type code should be a combination of valid codes as listed in Appendix 1.

Total Birds captured numbers for the tow record (y_warp_strike_capture)

bird_capture_key	Must have a value that is unique for this table.
fishing_event_key	Fishing event key must equal a fishing_event_key held in the y_warp_strike table.
recov_from	Must be a valid code as listed in Appendix 1, i.e., W, N, M or U.
status	Must be a valid code as listed in Appendix 1, i.e., A, D, I, U.
size	Code for bird size, must be “L”, “S” or “N”.
bird_count	Should be an integer greater than or equal to zero.

Warp-strike mitigation devices (t_warp_strike_devices)

warpstrike_device_key	This key must have a value that is unique for this table.
warpstrike_sample_key	The warp strike sample key must equal a warp strike sample key held in the y_warp_strike_sample table.
device_complete	Device complete code should be “Y”, “N” or “U “.
deploy_sides	Sides device deployed code should be “P”, “S”, “B” or “N”.

Bird Baffler Details (y_bird_baffler)

baffler_key	The bird baffler key must have a value that is unique for this table.
trip_key	Must be equal to a value in the *y_observer_trip_master* table.
trip_number	The trip number should be a valid trip number present in the table *y_observer_trip_master*.
obs1 } **obs2** }	Observer 1 code and observer 2 code should be valid observer codes, in the *y_ref_observer* table.
equipment code	Should be a valid equipment code for the seabird scaring device, comprised of a letter ‘B’ and a number, e.g. ‘B1’.
measure_date	Must be a valid date and should be within the dates for the trip.
measure_reason	Should be a valid reason to measure code, i.e., ‘I’, ‘D’, ‘R’ or ‘O’.
measure_type	Should be a valid measurement type, i.e., ‘F’ (Full) or ‘P’ (Partial).
based_on	Should be a valid equipment code as recorded previously for this trip.

Tori Line Details (y_tori_line)

tori_key	The tori line key must have a value that is unique for this table.
trip_key	Must be equal to a value in the *y_observer_trip_master* table.
trip_number	The trip number should be a valid trip number present in the table *y_observer_trip_master*.
obs1 } **obs2** }	Observer 1 code and observer 2 code should be valid observer codes, in the *y_ref_observer* table.
equipment code	Should be a valid equipment code for the seabird scaring device, comprised of a letter ‘T’ and a number, e.g. ‘T1’.
measure_date	Must be a valid date and should be within the dates for the trip.
measure_reason	Should be a valid reason to measure code, i.e., ‘I’, ‘D’, ‘R’ or ‘O’.
measure_type	Should be a valid measurement type, i.e., ‘F’ (Full) or ‘P’ (Partial).
based_on	Should be a valid equipment code as recorded previously for this trip.

Warp Scarer Details (y_warp_scarer)

wpsr_key	The warp scarer key must have a value that is unique for this table.
trip_key	Must be equal to a value in the *y_observer_trip_master* table.
trip_number	The trip number should be a valid trip number present in the table *y_observer_trip_master*.
obs1 } **obs2** }	Observer 1 code and observer 2 code should be valid observer codes, in the *y_ref_observer* table.
equipment code	Should be a valid equipment code for the seabird scaring device, comprised of a letter 'W' and a number, e.g. 'W1'.
measure_date	Must be a valid date and should be within the dates for the trip.
measure_reason	Should be a valid reason to measure code, i.e., 'I', 'D', 'R' or 'O'.
measure_type	Should be a valid measurement type, i.e., 'F' (Full) or 'P' (Partial).
based_on	Should be a valid equipment code as recorded previously for this trip.

SLED Details (y_sled_details)

sled_key	The sled key must have a value that is unique for this table.
trip_key	Must be equal to a value in the *y_observer_trip_master* table.
trip_number	The trip number should be a valid trip number present in the table *y_observer_trip_master*.
obs1 } **obs2** }	Observer 1 code and observer 2 code should be valid observer codes, in the *y_ref_observer* table.
equipment code	Should be a valid equipment code for the seabird scaring device, comprised of a letter 'S' and a number, e.g. 'S1'.
measure_date	Must be a valid date and should be within the dates for the trip.
measure_reason	Should be a valid reason to measure code, i.e., 'I', 'D', 'R' or 'O'.
measure_type	Should be a valid measurement type, i.e., 'F' (Full) or 'P' (Partial).
based_on	Should be a valid equipment code as recorded previously for this trip.

Surface long-line business rules

Trip details (z_sll_trip)

trip_number	Must be not null and an integer greater than zero.
obs_trip_no	Should be a valid observer trip number.
vessel_key	Must be a valid Ministry vessel key number.
observer	Must not be null.
vess_nat	Must be one character, and should be either a ‘A’, ’J’, ‘N’ or ‘P’.
vess_status	Must be one character that is either a “F”, “C” or “D”.
fishery	Must be one character that is either a “S”, “N” or “D”.
streamer	No longer used
start_of_trip	Must be a valid date and should be on or after 19 June 1987 and should not exceed current date.
end_of_trip	Must be a valid date on, or after, 19 June 1987 and can not exceed current date. **Multiple column checks on trip dates:** The trip start date must not be greater than the trip end date.
snood_code	No longer used

Longline set table (y_sll_line_set)

bird_area	Must be an integer between the range of 1 to 4 inclusive.
fma_code	Must be an integer between the range of 1 to 10 inclusive.
trip_number	Must be a valid observer longline trip number as listed in the *y_observer_trip_master* table.
set_number	Must be an integer greater than zero.
	Multiple column checks on trip number and set number: The combination of trip number and set number must be unique.
fishing_event_key	The fishing event key must be unique within this table.
set_date_start	Must be a valid date on, or after, 19 June 1987 and can not exceed current date.
	Multiple column checks on trip dates and set date: Longline set date must be on or after the trip start date, and on or before the trip end date.
target_species	Must be a valid species code as listed in the *x_species* table.
start_time	Start time of the longline set must be a valid 24-hour time and fall within the range of 0 – 2359 hours.
start_latitude	Must be an integer that represents a valid latitude with the implied value of minutes not exceeding 59 and should be within the reasonable range of 2400 to 4900.
start_longitude	Must be an integer that represents a valid longitude with the implied value of minutes not exceeding 59 and should be within the reasonable range of 16300 to 18000.
start_east_west	Must be one character that is either a "E" or "W".
end_time	Finish time of the longline set must be a valid 24-hour time and fall within the range of 0 – 2359 hours
end_latitude	Must be an integer that represents a valid latitude with the implied value of minutes not exceeding 59 and should be within the reasonable range of 2400 to 4900.
end_longitude	Must be an integer that represents a valid longitude with the implied value of minutes not exceeding 59 and should be within the reasonable range of 16300 to 18000.
end_east_west	Must be one character that is either a "E" or "W".
line_length	Must be an integer between the range of 0 to 350.

basket_number	Must be an integer between the range of 1 to 800.
hooks_set	Must be an integer between the range of 1 to 4000.
hooks_observed	Must be an integer between the range of 0 to 4000
	Multiple column checks on *hook_set* and *hooks_observed*: The number of hooks observed must be less than or equal to the total number of hooks in a longline set.
vessel_speed	Must be a number between 2 and 15.
snood_signal_time	Must be a number between 3 and 15.
line_feed_rate	Must be a number between 2 and 10.
buoy_length	Must be a number between 5 and 60.
min_depth	Must be a number between 5 and 350
max_depth	Must be a number between 5 and 350.
	Multiple column checks on minimum and maximum longline depths: Minimum longline set depth must be less than or equal to the maximum longline set depth.
ccamlr_tori_pole	Must be one character that is either a "Y" or "N".
tori_used_yn	Must be one character that is either a "Y" or "N".
streamer_number	Must be an integer between 0 and 100.
tori_length	Must be an integer between 10 and 350.
tori_height	Must be an integer between 1 and 20.
line_entry_yn	Must be one character that is either a "Y" or "N".
bait_stream	Must be an integer between 0 and 20.
bait_wake_yn	Must be one character that is either a "Y" or "N".
bait_vessel	No longer used
bait_sink	No longer used
cloud_cover	Must be an integer between the range of 0 to 100.

Longline set table (y_sll_line_set) continued

barometer_reading	Must be an integer between 935 and 1045.

start_wind_direction Must be an integer between the range of 0 to 359.

start_wind_force Must be an integer between the range of 0 to 12.

weather_code No longer used, refer to the attribute *l_line* in the table *t_weath_code.*

bait_condition_code Must be one character that is either a "F", "T" or "I".

bait_thrower_used_yn Must be one character that is either a "Y" or "N".

number_of_vessels Must be an integer between the range of 0 to 20.

number_of_longliners Must be an integer between the range of 0 to 20.

set_observation_time Time of observation must be a valid 24-hour time and fall within the range of 0 – 2359 hours

Multiple column checks on longline set start time and observation time:
Time of observation must be on or after the start time of the longline set.

set_performance_code Must be equal to either "0" or "1".

Longline haul table (y_sll_haul)

haul_effort_key	Must have a value that is unique within this table
trip_number	Must have a value. **Multiple column checks on trip number and set number:** The combination of trip number and set number must exist in the *y_sll_line_set* table.
haul_date	Must be a valid date on, or after, 19 June 1987 and can not exceed current date. **Multiple column checks on trip dates and haul date:** Longline haul date must be on or after the trip start date, and on or before the trip end date. **Multiple column checks on longline set date and haul date:** Longline haul date must be on or after the longline set date.
observation_time	Time of observation must be a valid 24-hour time and fall within the range of 0 – 2359 hours.
haul_latitude	Must be an integer that represents a valid latitude with the implied value of minutes not exceeding 59 and should be within the reasonable range of 2400 to 4900.
haul_longitude	Must be an integer that represents a valid longitude with the implied value of minutes not exceeding 59 and should be within the reasonable range of 16300 to 18000.
haul_east_west	Must be one character that is either a "E" or "W".
bottom_depth	Must be an integer between 50 and 6000.
surface_temperature	Must be a number between 5 and 27.
vessel_speed	Must be a number between 0 and 15.
vessel_heading	Must be an integer between 0 and 359.
wind_beaufortscale	Must be an integer between 0 and 12.
wind_direction	Must be an integer between 0 and 359.
end_hauled_first	Must be equal to either "0" or "1".
start_finish_code	Must be one character that is either a "S", "F", "O" or "L".
haul_performance_code	Must be equal to either "0" or "1".

Events table (y_sll_events)

fishing_effort_event_key	Must have a values and must be unique. **Multiple column checks on trip number and set number:** The combination of trip number and set number must exist in the *y_sll_line_set* table.
event_code	Must be a valid event code as listed in the *y_sll_event_code* table.
time_start	Time of event must be a valid 24-hour time and fall within the range of 0 – 2359 hours.
minutes_number	Must be an integer greater than or equal to zero and should fall within the reasonable range of 1 to 1440.

Catch and specimen table (y_sll_catch_specimen)

specimen_id_number	Must be an unique not null integer greater than zero.
	Multiple column checks on trip number and set number: The combination of trip_number and set_number must exist in the *y_sll_line_set* table.
sample_number	Must be an integer greater than zero
	Multiple column checks on trip_number and sample_no: Sample numbers should be unique within each trip.
species	Must be a valid species code as listed in the *x_species* table.
landed_time	Time specimen landed on the deck must be a valid 24-hour time and fall within the range of 0 – 2359 hours.
species_status_code	No longer used, pre-1992 only, refer to the *y_sll_species_status_code* table.
specimen_life_code	Must be a valid life code as listed in the *y_sll_specimen_life_code* table.
handling_code	Must be a valid handling code as listed in the *y_sll_handling_code* table.
damage_code	Must be a valid damage code as listed in the *y_sll_damage_code* table.
number_caught	Must be an integer, greater than 0.
fork_length	Must be an integer between the range of 1 and 800.
	Multiple column checks on species code and fork length: The fork length should be less than the maximum length of the species as listed in the *x_species* table.
length2	Must be an integer between the range of 1 and 800.
	Multiple column checks on species code and *length2*: Other specimen lengths should be less than the maximum length of the species as listed in the *x_species* table.
greenweight	Must be an integer between the range of 1 and 450.
	Multiple column checks on species code and green weight: The green weight should be within the reasonable limits for the species code as listed in Appendix 1.

Catch and specimen table (y_sll_catch_specimen) continued

processing_code Must be a valid processing code as listed in the *y_sll_processed_code* table.

processed_weight Must be an integer between 1 and 280.

sex Must be a valid sex code listed in the lookup table.

sample_1-8 Must be a valid sample code as listed in the *y_sll_sample_code* table.

true_species Must be a valid species code as listed in the *x_species* table.

specimen_performance_code Must be equal to either “0” or “1”.

Snoods strategy table (y_sll_snoods)

trip_number Must be a valid observer longline trip number as listed in the *y_observer_trip_master* table.

snood_number Must be an integer between the range of 1 to 30.

start_set Must be an integer greater than zero.

Multiple column checks on trip number, snood number and start set:
The combination of trip_number, snood_number and start_set must be unique.

end_set Must be an integer greater than zero.

Multiple column checks on start set and end set:
The finish set number should be the same as, or after, the start set number.

total_length Must be an integer between the range of 6 to 50.

trip_key Must have a value and should be equal to a trip key in y_observer_trip_master.

Bait strategy table (y_sll_bait)

trip_number Must exist and be a valid observer longline trip number as listed in the *y_observer_trip_master* table.

start_set Must be an integer greater than zero.

end_set Must be an integer greater than zero.

Multiple column checks on start_set and end_set:
The finish set number must be the same as, or after, the start set number.

bait_number Must be an integer between the range of 1 to 30.

bait_code Must be a valid bait code as listed in the *y_sll_bait_code* table.

Bait codes table (y_sll_bait_code)

bait_code Must exist and be a unique integer between 1 and 127.

bait_typedescription Must exist.

Damage codes table (y_sll_damage_code)

damage_code Must exist, and be a unique integer.

damage_type_description Must exist.

Event codes table (y_sll_event_code)

event_code Must exist and be a unique integer.

event_description Must exist.

Handling codes table (y_sll_handling_code)

handling_code Must exist, must be unique, and should be only 1 character in length..

handling_description Must exist.

Life sign codes table (y_sll_specimen_life_code)

specimen_life_code Must exist, must be unique, and should only be 1 character in length.

specimen_life_signs_descript Must exist.

Fish processing codes table (y_sll_processed_code)

processed_code Must exist, must be unique, and should be only 2 characters in length..

processed_type_description Must exist.

Sample codes table (y_sll_sample_code)

sample_code Must exist and must be a unique integer.

sample_description Must exist.

Specimen status codes table (y_sll_species_status_code)

species_status_code Must exist and must be a unique integer.

species_status_description Must exist.

Weather codes table (y_sll_weather_code)

weather_code Must exist and must be a unique integer.

weather_description Must exist.

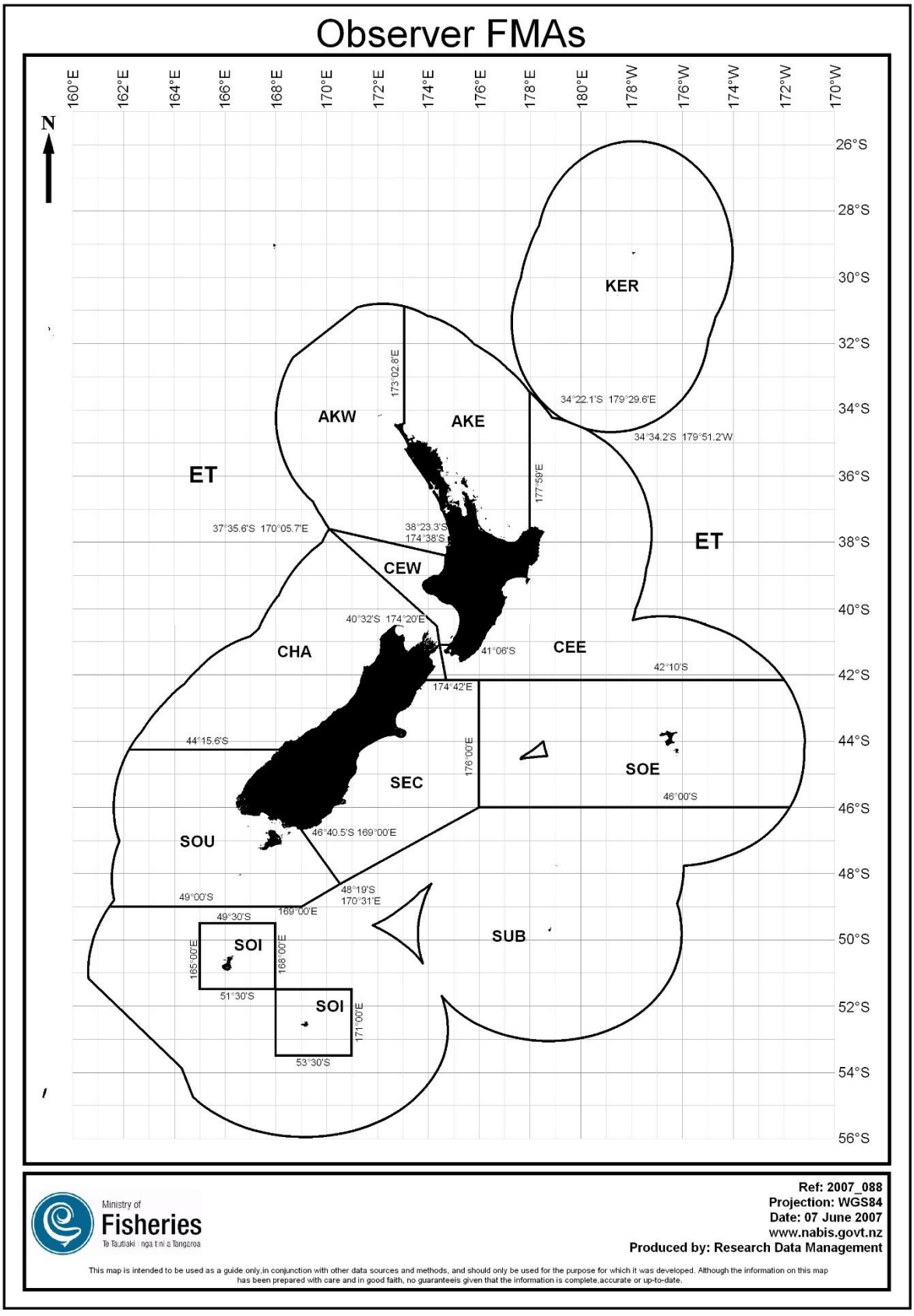

Figure A1: Observer Fisheries Management Areas (FMAs).

Note areas outside the EEZ denoted ‘ET’ in figure A1 are reassigned to more specific area codes. See table in Appendix 1 below for a list of area codes.

Appendix 1: Reference Code Tables

The information listed in this Appendix is current at the time of writing, and as implemented at November 28, 2008. The corresponding code tables in the database document the codes used.

Origin codes

SOP **Scientific Observer Programme**
ORM Orange Roughy Management Company.
HMC Hoki Management Company.
FRC Fisheries Research Centre
CSP Conservation Services Programme (DOC)

Area codes

The area codes below are from table x_area_ref and are a sub-set of the area codes in the **rdb** database. These codes are used in the columns including start_obs_fma and end_obs_fma.

AKE East North Is. from North Cape to Bay of Plenty (FMA1)
AKW West North Is. from North Cp. to North Taranaki Bight (FMA9)
CEE East North Is. from south of Bay of Plenty to Wgtn (FMA2)
CET Challenger Plateau, beyond the EEZ (FMA)
CEW West North Is. from South Taranaki Bight to Wgtn (FMA8)
CHA West Coast South Island to Fiordland incl. Kaikoura (FMA7)
HOWE Lord Howe Rise
KER Kermadec (FMA 10)
LOUR Louisville Ridge
PRET Pukaki Rise ET - beyond the EEZ on the Pukaki Rise
SEC East Coast South Island from Pegasus Bay to Catlins (FMA3)
SOE Chatham Rise (FMA 4)
SOI Southern Offshore Islands - Auckland & Campbell Is. (FMA6A)
SOU South Island from Foveaux Strait to Fiordland (FMA5)
SUB Subantarctic incl. Bounty Is and Pukaki Rise (FMA6)
TKET Three Kings Rise, beyond the EEZ
TMAR Tasmanian Ridge
WANB Wanganella Bank
SOET Southern Ocean (beyond the EEZ)

Fishing method codes (from table x_fishing_method)

These are the codes used in x_fishing_event.fishing_method and fishing_method columns in the stage tables.

BLL Bottom Longline
DAL Drop or Dan Lines
TRO Trolling lines
HAL Handlines
TRL Trot Lines
PS Purse Seine
SN Set Net
SLL Surface Long Line (tunas etc)
POT Pots unspecified, includes Rock lobster pots and or cod pots, typically for data from the Inshore interactions.
MW Midwater Trawl (single). Used by Inshore interactions trips
BT Bottom Trawl (single). Used by Inshore interactions trips
TWL Trawling (includes BT & MWT) used for data from Trawl Catch Effort Logbook including equivalent electronic tablet data.
UNK Unknown method

length_measure_codes

1 Fork Length
2 Total Length
3 Standard Length
4 Mantle Length (squid)
5 Pelvic Length (rays)
6 Carapace Width
7 Shell Height
B Carapace Length - Orbit to Carapace notch (scampi)
G Tip of snout to posterior end of dorsal fin (Ghost sharks)
D Derived length
X Fish not measured or unknown
R Wingspan or disk width for Skates and Rays as the straight line distance from wing tip to wing tip (i.e. the greatest width)
A Snout-Anus length, from tip of the snout to the anus,
e.g., for Macrourus spp.

Bottom contour codes

0 **Unknown**
1 Smooth / flat
2 Undulating
3 Hillocks
4 Rugged
5 Very rugged
6 Pinnacle
7 Canyon

Discard codes

R Retained
D Discarded
F Finned
U Unobserved
L Lost
E Eat
X Not recorded / requested

Line catch weight method codes (for catch weight on t_catch records)
Part 1: the device used to weigh fish,
0 No scales used.
1 **Salter scales (spring/manual)**
2 SeaWay (motion compensated electronic) scales
Platform or Flatbed (manual) scales

Part 2:
A Extrapolated from other catches (retrospectively).
B Visual estimate
C Inexact count *x* estimated average weight
D Calculated by deduction (total minus other species)
E Measured dimensions *x* density
F Calculated from percentage composition
G Calculated from percentage composition over several tows
H Measuring fish and correlating length with weight
I Accurate count *x* average weight for previous tows
J Accurate count *x* average weight in random sample this tows
K Weighed in full.

Sample weight method codes
1 Salter scales (spring/manual)
2 SeaWay (motion compensated electronic) scales
Platform or Flatbed (manual) scales
Accurate electronic scales (vessels)
99 Other weighing method used or weight estimated.

Trawl catch weight method codes (for catch weight for trawl methods.)
Part1: The location of the catch at the time of analysis.
1 In or spilling from codend.
3 Loose on deck.
5 In holding bins.
7 On sorting conveyor or in processing area
9 Packing area.

Part 2: Method used to analysis the total catch.

A Extrapolated from other catches (retrospectively).
B Visual estimate
C Inexact count *x* estimated average weight
D Calculated by deduction (total minus other species)
E Measured dimensions *x* density
F Calculated from percentage composition
G Calculated from percentage composition over several tows
H Measuring fish and correlating length with weight
I Accurate count *x* average weight previous tows
J Accurate count *x* average weight in random sample this tows
K Weighed in full.
X Any other technique (should be defined in comments).

Beaufort scale of wind force

0	Calm, glassy	< 1
1	Light air	1 - 3
2	Light Breeze	4 - 6
3	Gentle Breeze	7 - 10
4	Moderate Breeze	11 - 16
5	Fresh Breeze	17 - 21
6	Strong Breeze	22 - 27
7	Near Gale	28 - 33
8	Gale	34 - 40
9	Strong Gale	41 – 47
10	Storm	48 – 55
11	Violent Storm	56 – 63
12	Hurricane	64 +

Offal codes

0 Offal was not dumped overboard while shooting or hauling the gear.
1 Offal was dumped overboard while shooting the gear only.
2 Offal was dumped overboard while hauling the gear only.
3 Offal was dumped overboard while shooting and hauling the gear.
9 Offal undefined (pre trip numbers 780).

Tori pole used codes

0 No tori pole to CCAMLR specifications used.
1 Yes if a tori pole to CCAMLR specification used.

Tow type codes

1 Bottom throughout tow.
2 Midwater at relatively constant depth.
3 Midwater in a broad range of depths.
4 Mixed bottom & midwater.

Tow configuration codes

A Straight line
B ”U”
C Zigzag
D Closed pattern (circle, loop etc)
E Constant depth contour
F Pinnacle fishing

Sex codes (for non-fish bycatch and squid)

0 Unsexed
1 Male
2 Female

Life status codes

1 Alive
2 Dead
3 Killed by crew
4 Dead – prior to catch, already decomposing

Marked codes

R Retained.
D Discarded unmarked.
M Marked or tagged & discarded.

Catch assessment codes (for the degree of observation by the observer)
From the Observer (bottom) long line instructions.
These codes are used in the column x_bottom_lining_effort. catch_assessment_code

11 Observed all setting and hauling and the catch.
21 Observed the setting and the catch but not the hauling.
31 Observed the hauling and the catch but not the setting.
41 Observed the catch only, neither setting or hauling.
12 Observed nil, all figures from the crew
22 Observed setting only, neither hauling or catch.
32 Observed haul only, neither setting or catch.
10 Observed setting only, gear not retrieved (lost).
99 Observed parts of all operations.

Discharge side codes

P	Port
S	Starboard
B	Both
N	Neither / None

Discharge rate codes

0	none,
1	negligible,
2	intermittent,
3	continuous

Discharge type codes

S	Sump water,
M	Minced,
C	Cutter pump,
O	Offal,
D	Discards

Fishing strategy codes

0	Vessel not actively targeting fish marks (Code used to July 2007)
1	Vessel actively targeting fish marks (Code used to July 2007)
A	Vessel apparently chose fishing location mainly because of fish marks seen on the sounder
B	Vessel apparently chose fishing location mainly because of bathymetry or other environmental conditions
C	Vessel apparently chose fishing location mainly because of reference to historical records
D	Vessel apparently chose fishing location mainly because of information provided by other vessels fishing
E	Vessel apparently chose fishing location to avoid bycatch
U	Observer could not tell how the vessel chose fishing location

Seabird warp-strike observations total birds “recovered from” codes

W	Warps
N	Net
M	Mitigation device
U	Unknown sources

Status codes for seabird warp-strike observations bird counts

D	Dead
I	Injured
A	Non injured
U	Unknown when no observation was made.

Codes for the Observer purse seine 'Vessel Activity Log'

ACTIVITY CODES	Using the codes listed in the right hand column of the Activity Log form, record the vessel's activity. Specify any details in the comments column (e.g. Activity 3; steaming to TAU, full load). Code explanations are provided below:
x	Prefix any activities not observed but noted by crew and subsequently transcribed with an "x".
1	Use each time the vessel commences a set (indicated by lowering the skiff off the vessel when a target school has been reached). The start time for Activity 1 should correspond to the "Start of Set" time on the CESD; the end time for Activity 1 should correspond to the "End of Set" time recorded on the CESD.
2	The vessel is searching for a school to target (e.g. using sonar or crows nest watch).
2a	When the vessel has been notified of a sighting and is traveling to the approximate location of the school.
3	If the vessel is traveling in to port, traveling out from port, or traveling from an overnight mooring / hove to their target fishing grounds (e.g. vessel may leave Tauranga and travel to Cape Brett).
4	If the vessel is unable to fish because of a vessel malfunction (most probably followed by Activity 3), or if (e.g.) a net has burst and has to be repaired prior to the next set.
5	If the vessel is unable to fish because of inclement weather (either in port or sheltering at sea).
5a	If the vessel is idle and waiting for the spotter plane to radio in a sighting
6a	You have boarded the vessel, but it is not yet ready to leave port (or is ready to leave but is unable to). Explain in comments
6	If, during your trip the vessel's holds become full and they come into port to offload their catch.
7	If the vessel feeds out the net (i.e. skiff off), with the sole intention of cleaning the net (i.e. they are *not* trying to catch anything, but are trying to remove debris etc that may have become entangled from the previous set).
8	If the vessel is investigating a school of fish (for example) to determine if it is suitable to target (eg. target species and school size).
11	If the vessel is moored/anchored overnight in a sheltered area (bay/inlet), or is drifting (hove to) overnight. Note lat/long and any other vessels in vicinity.
13a/b	If for any reason the vessel is unable to, or is not fishing, and no other "no fishing" codes are relevant. Note reason in comments field.
S1	The time that the spotter plane takes off (from airport) to search **A three letter code for the airport is recorded in the "port" field.**
S2	The time that the spotter plane lands
S1a	Record the time and the position of the school (lat/long) when the spotter pilot radios in a sighting to your vessel.
H1 / H2	Record the time that the helicopter takes off (from vessel) and returns to the vessel. Only relevant for larger vessels that carry a helicopter on board.
16O	Any other activity that is not covered by any of the codes listed (except "no fishing" - use 13a/b).

SCHOOL ASSOC	Using the codes on the right hand side of the page, record what the target/sighted school of fish were associated with. These fields indicate how the person who detected the school *initially* "spotted" it. Each field is explained below:
A1	If the pilot/skipper simply saw the school swimming beneath the surface (i.e. not stationary and feeding), with no birds present.
A2	If the pilot saw a "boil up" (i.e. localised sea surface turbulence), the school is probably feeding. Note in the comments section the likely species, eg krill.
A3	Often schools of pelagic species shelter from birds beneath flotsam (logs, dead cows, etc), if they are available. The spotter may radio to the skipper to investigate such debris.
A4	Vessels may deploy a Fish Aggregation Device (FAD), a raft, or a payao (usually in the Pacific when targeting tuna). An explanation of a payao is, "a big floating cylinder made of GI sheet four meters long and a meter wide. The crew put coconut fronds around the floating cylinder to provide shade for the fish. Naturally, the fish would gather around the payao". If the FAD is drifting freely, use A4, if anchored (fixed to one spot), use A5.
A5	FAD as above, if anchored (fixed to one spot).
A8	If a particular association is not listed, record "A8" and record in the comments space what the school was associated with (e.g. dolphins feeding).
A9	If the spotter / skipper saw birds feeding on the target school.

SCHOOL DETECT	Using the codes on the right hand side of the page, record who **initially** detected the target school.
D1	If someone on the vessel spotted the school **without assistance** from persons not on the vessel
D2	If the helicopter / airplane pilot radioed in a sighting.
D3	If another vessel / aircraft has spotted a school and (e.g. radioed your vessel to notify that) they deployed a beacon to mark that school, **and** the beacon is detected by your vessel.
D4	If your vessel is fitted with a bird radar device and this is used to detect birds feeding on a target school.
D5	If your vessel is fitted with a sonar and/or depth sounder and this is used to detect a target school.
D6	If another vessel has spotted a school and notified/radioed your vessel of that school and its location.
D8	If the detection method is not listed, record "D8" and explain in the comments field how the school was detected.

Codes for the Observer purse seine set.

Result
Entire school caught (on board)
Some caught / some lost
Skunked (entire school lost)
Caught unknown amount
Catch let go.

Green weight ranges by species code (for SLL caught specimens).

Species	min(greenweight)	max(greenweight)
ABR	1	5
AGR	5	10
ALB	1	30
BAR	1	8
BAS	1	6
BBA	1	5
BDA	1	5
BET	68	200
BIG	12	150
BNS	2	9
BRA	4	5
BSH	1	3
BSP	1	21
BTU	4	117
BWH	85	195
BWS	1	237
CAR	2	8
CYL	1	5
CYO	1	118
CYP	1	66
DAS	1	10
DEA	1	20
DOF	1	7
DPO	1	15
DWD	1	14
EMA	1	8
FAN	1	1
FTU	2	8
FUR	30	61
HAK	2	34
HAP	1	3
HHS	8	8
HOK	1	5
HPB	3	9
KIN	1	19
LAT	1	102
LCA	5	6
LEP	3	50
MAK	2	248
MEZ	5	15
MOO	4	66
NEX	1	1
NTU	7	242
OFH	1	45
PAH	10	33
PLS	3	4
POS	1	164
RAG	2	2
RAY	7	113
RBM	1	18
RUD	1	98
SAW	0	0
SCH	3	142
SEV	54	54
SHA	2	75
SKA	7	7

SKI	1	1
SKJ	1	9
SLB	10	10
SPD	1	13
SSF	17	20
STM	11	142
STN	10	215
STO	12	12
STR	3	3
STU	5	144
SUN	10	250
SWO	5	341
TAS	1	3
THR	53	410
TJA	10	10
WIN	0	2
WWA	6	6
XBM	3	6
XGP	1	15
XKM	6	6
XPE	1	1
XRA	5	15
XWA	5	16
XWC	1	2
XWM	2	6
YFN	4	68
ZEL	1	3

Non-fish length ranges

FUR 50 – 250 cm
POE 45 – 250
BDO 45 – 250
CDD 50 – 250
DDO 40 – 250
HDO 40 – 170
HSL 99 – 250
SEA 40 – 200

Species description codes

code	**descrption**
A-	Seaweed
B-	Birds
CC	Crustacea, Crab
CD	Crustacea, Decapod
CL	Crustacea,Lobster
CG	Crustacea, General
E-	Echinoderms
FB	Fish, Billfish
FC	Fish, Chimaeras
FE	Fish, Marine eels
FF	Fish, Flatfish
FG	Fish, General
FM	Fish, Macrouridae
FR	Fish, Rays & Skates
FS	Fish, Sharks & Dogfish
FT	Fish,Tuna
FW	Fish,Freshwater
H-	Marine Mammals
MB	Molluscs, Bivalves
MG	Molluscs, General

MF	Molluscs, Freshwater
MO	Molluscs, Octopus
MS	Molluscs, Squid
MU	Molluscs, Univalves
N-	Cnidaria
O-	Other
P-	Porifera
R-	Reptiles
Z-	Zoo & Phytoplankton
G-	Rubbish & Garbage
WP	Worm, Polychaete

As used in table x_species_codes.description

Appendix 2: Data entry, error checking, and loading

The data in ***cod*** have come predominately from the Scientific Observer Programme (SOP), while some data from various other sources is also included. The SOP trips began in 1986. In addition a small number of trips onboard commercial vessels, carried out by Fisheries Research Centre (FRC) staff, three earlier trips from 1979 to 1980, and several later trips are stored in the c**od** database. Other research providers under contract to the Ministry of Fisheries may supply data from industry observers. Data from other organizations are supplied in electronic form and are checked by their researchers working with the data as part of their contracts. These data are not all subject to the same level of checking by NIWA, as would be expected if NIWA was supplied with the raw data and was responsible for the data entry and checking of these data.

This section outlines the flow of paper-recorded data, for SOP data from collection through to its availability to researchers for analysis, and defines the separate tasks that are required to do this.

In this summary, the Observer data are recorded on hand written paper forms. Each trip is identified by its unique trip number, each tow or set by a sequential station number, each sample by a species. The date and time will also be recorded as part of the station data.

1. **Pre-key entry, visual checking and batching:**
At the completion of each trip the Observer should ensure that all pages are in order, and that all required data fields have been correctly filled out. The data are then forwarded via the Observer Programme, to a project team member, who checks the above, and forwards the data to key entry.

2. **Key entry of data:**
At this point, trained data entry operators key in the data from the collated forms to a electronic fixed format ASCII file format on computer by keyboard entry. NIWA uses the KEYS Data Emulator for data entry.

All data entry is verified, that is, each page of data are keyed in twice and the two results are crosschecked for mismatches. Any data entry operator errors are corrected at this point.

The electronic data files are transferred for error checking along with the original raw data file. At this point the data are now ready for error checking and formatting routines.

3. **Data error checking, validation, and grooming:**
Data files are put through a number of computer error checking (validation) routines that look for inaccuracies and inconsistencies within trips. Any errors detected are corrected. Data are then passed through these error-checking routines until the data reach a satisfactory standard that will allow them to be inserted in the appropriate database tables.

The data are inserted into the load tables, "working tables" may also be used. This allows further checks of the integrity of the data, by taking advantage of relational databases ability to manipulate, match and compare related sets of data.

4. **"Groomed", validated data loaded to database. Available for analysis:**
The clean, groomed, and validated data are inserted into the appropriate database (in this case c**od** on **snapper**) and now become available for extract and analysis.

The clean electronic data files and raw paper data are then archived for safekeeping.

Appendix 3: Data forms

Data forms with database table and attribute names imprinted:

Labels imprinted on the following observer forms, show the table and attribute name, the location where the item of information on the form is stored in COD. Only one location is shown for any one item of information, however a number of data fields are stored in more than one location in the database. Some data are stored as coded fields and these are enclosed in square brackets, e.g. trip number shown as trip_key, [trip_key] and the vessel ID or vessel name as [vessel_key].

The Middle Depth Biological Data (MDBD) form is used in several modes. Firstly it is used to record standard Length Frequency (LF) samples, for samples with fewer than 20 fish, these samples are stored as standard LF samples, in the *x_length_frequency* table. The imprinted labels shown on the MDBD form, represent data storage for samples containing individual specimen information, such as squid with individual specimen weights, stored in the *x_fishing_event_biological* table. Scampi are always recorded individually on the MDBD form, to record both egg stage and shell state by specimen, hence SCI are also stored in the *x_fishing_event_biological* table.

The tables listed are all report tables except for several stage tables, where some fields are not stored in the report tables i.e. on the Observer Benthic Materials Form. The FMA recorded on forms may be left blank, to indicate FMAs stored in the report tables are derived from the latitude and longitude position information.

Table names have been abbreviated as listed:

bu	x_bait_usage
bb	x_bird_baffler
bm	x_bird_baffler_boom
be	x_bottom_lining_effort
ni	x_bycatch_incident
nc	x_bycatch_incident_catch
cf	x_conversion_factor
cc	x_conversion_factor_comment
ev	x_event
fv	x_fishing_effort_event
fi	x_fishing_event
bi	x_fishing_event_biological
fc	x_fishing_event_catch
cs	x_fishing_event_catch_sample
sn	x_fishing_event_catch_specimen
ec	x_fishing_event_comment
eu	x_fishing_event_usage Bait
fg	x_fishing_gear
he	x_haul_effort
lf	x_length_frequency
me	x_mitigation_event
pd	x_processed_event_catch_detail
pr	x_processed_species_summary
pe	x_processing_event
pc	x_processing_event_catch
pa	x_purseseine_activity

ps	x_purseseine_effort
se	x_setnet_effort
sg	x_setnet_gear
ns	x_setnet_nets_set
sc	x_sled_comment
sd	x_sled_details
sg	x_sled_grid
su	x_snood_usage
ss	x_specimen_stomach
sl	x_surface_lining_effort
tl	x_tori_line
tp	x_trawl_components
te	x_trawl_effort
tg	x_trawl_gear
tr	x_trip
tc	x_trip_comments
ob	x_trip_observer
tf	x_troll_configuration
to	x_troll_effort
th	x_troll_heads
ho	x_troll_hooks
ts	x_troll_skirts
ws	x_warp_scarer
wa	x_warp_strike
wc	x_warp_strike_capture
wd	x_warp_strike_device
ss	x_warp_strike_sample
yb	y_benthic

Ministry of
Fisheries
Te Tautiaki i nga tini a Tangaroa

OBSERVER PROGRAMME

Trawl Catch Effort Logbook

Trip number tr.trip_number

Name of vessel [tr.vessel_key]

Registration number of vessel yv.vessel_id

Nationality of vessel (observer derived) tr.obs_nation_code

Observer names [ob.observer_key] and [ob.observer_key]

Book number ____ of ____ for this trip

This book is from ____ tr.start_date ____ to ____ tr.end_date ____

Office use only

Fisheries Observer Officer

Target species ____ and ____

Trip type OBS ____ CR ____ Other ____

Data entry complete

Date ____/____/____ Initials ____

Data validation complete

Date ____/____/____ Initials ____

PROPERTY OF

OBSERVER PROGRAMME
PO BOX 1020
WELLINGTON

1. Shooting

Tow number	FMA	Target species	Fishing strategy	Gear code from gear form	Offal Discharge	Whole Fish Discharge
fi.station_number		fi.target_species	te.fishing_strategy te.who_shot_net	te.gear_code	te.shot_offal_discharge	te.shot_fish_discharge

2. Start of tow

Start code	Date dd/mm/yy	Time 24-hr clock	Latitude Degrees Minutes	Longitude Degrees Minutes E/W	Groundline depth (m)	Seabed depth (m)
te.tow_start_point te.start_time_code	ev.event_start_date	ev.event_start_time	ev.start_latitude S	ev.start_longitude	te.start_net_depth	fi.start_seabed_depth

3. During tow

Headline height (m)	Tag	Doorspread from sensor (m)	Beaufort number	Fishing path	Fishing speed (knots)	Gear event codes	Offal Discharge	Whole Fish Discharge
te.headline_height	te.headline_tag	te.doorspread	fi.beaufort_scale	te.tow_type te.tow_configuration te.tow_turn	fi.fishing_speed	te.gear_events	fi.tow_offal_discharge	fi.tow_fish_discharge

4. End of tow

End code	Date dd/mm/yy	Time 24-hr clock	Latitude Degrees Minutes	Longitude Degrees Minutes E/W	Groundline depth (m)	Seabed depth (m)
te.end_time_code te.tow_end_point	ev.event_end_date	ev.event_end_time	ev.end_latitude S	ev.end_longitude	ev.end_net_depth	fi.end_seabed_depth

5. Hauling

Time net at surface 24-hr clock	Time net on board 24-hr clock	Offal Discharge	Whole Fish Discharge
te.net_surface_time	te.net_onboard_time	fi.haul_offal_discharge	fi.haul_fish_discharge

6. Mitigation - Complete for entire tow

Mitigation equipment codes	Mitigation event codes
fi.mitigation_equipment	fi.mitigation_events

7. Greenweight catch

Eyeball estimate of greenweight at surface	Eyeball estimate of greenweight on board	Subsurface losses	Surface losses	Non-fish bycatch?	Benthic materials?
fi.total_surface_greenweight .0kg	fi.total_onboard_greenweight	te.subsurface_loss	te.surface_loss	Y fi.nonfish_bycatch	fi.benthic_material

Species code	Greenweight (kg)	Method of analysis		Species code	Greenweight (kg)	Method of analysis		Species code	Greenweight (kg)	Method of analysis	
fc.species	fc.greenweight	fc.weight_method_part1	fc.weight_method_part2								

Biological sampling: Number of species sampled	te.length_frequency_yn

Sum of greenweights	.0kg

8. Processed catch - Complete this section for either one tow [ ] or a group of tows [ ] (pc.complete_flag)

Species code	Processed state	Grade	Number of processed units	Tag	Unit weight (kg)	Tag	Processed catch weight (kg)	Conversion factor	Tag	Greenweight (kg)
	pd.processed_state	pd.grade_code	pd.units_number	pd.units_number_tag	pd.units_weight	pd.units_weight_tag	pd.processed_weight	pd.conversion_factor	pd.con_factor_tag	pd.greenweight

Tows section 8 applies to	pc.tow_min	to	pc.tow_max

Total greenweight of processed catch	pc.total_calc_greenweight .0kg

9. All other fish - Complete this section for either one tow [ ] or a group of tows [ ]

Include all whole fish discarded, discarded alive, lost, mealed, retained as specimens or stored in bulk.

Species code	Type	Greenweight (kg)	Method of analysis	
fc.species	fc.discard_status	fc.weight_method_part1	fc.weight_method_part1	fc.weight_method_part2

Species code	Type	Greenweight (kg)	Method of analysis	

Tows section 9 applies to	pc.tow_min	to	pc.tow_max

Total greenweight of all other fish	.0kg

10. Comments

te.comments_tow

Trawl Gear Details Form (Version 1- December 2007)

1. Record theTrip Number [tr.trip_number] [tg.trip_key]

2. Describe the trawling gear used by the vessel. You should use a separate column for each different trawl system.

Gear equipment code	tg.gear_equipment_code		
Observer code(s)	. [ob.trip_observer_key]	. and .	. and .
No of Warps/Doorspread	Number D/spread tg.door_spread	Number D/spread (m)	Number D/spread (m)
Door type and Area	tg.number_of_warps Type Area tg.door_area (m^2) tg.door_type	Type Area . (m^2)	Type Area . (m^2)
Sweep length	tg.sweep_length	(m)	(m)
Top bridle length	tg.bridle_length	(m)	(m)
Trawl wingless?	Y N U tg.trawl_wingless	Y N U	Y N U
Design headline height	tg.headline_height	. (m)	. (m)
Headline length/Wingspread	(m) W/spread tg.wing_spread tg.headline_length	(m) W/spread (m)	(m) W/spread (m)
Max size of groundgear	tg.max_size_groundgear	(mm)	(mm)
Groundgear components	tp.component		
Number of codends	tg.number_of_codents		
Lengthener mesh	tg.lengthener_mesh_size Size (mm) tg.lengthener_mesh_config Config	Size (mm) Config	Size (mm) Config
Codend mesh	tg.codend_mesh_size Size (mm) tg.codend_mesh_config Config	Size (mm) Config	Size (mm) Config
General features	tp.component		

3. Record any additional comments

tg.comments		

4. This form is page number [ ] for this trip. Is this form the last page for this trip? ⟶ Yes [X] No [X]

1. Write the trip number ws.trip_number

Warp Scarer Details Form (Version 1.5 - May 2007)

2. Describe one warp scarer in each column and assign it a unique code. If a warp scarer is changed during the trip, record it in a new column.

Warp scarer equipment code		W ws.equipment_code	W	W
Observer(s)		ws.obs1 and ws.obs2	. and .	. and .
Date Measured (dd/mm/yy)		ws.measure_date	/ /	/ /
Reason for measuring		ws.measure_reason		
Type of record (full or partial)		ws.measure_type Full Partial based on W ws.based_on	Full Partial based on W	Full Partial based on W
Attachment Location (**P**ort / **S**tarboard/**C**entral)		ws.attachment_point		
Main line diameter (mm)		ws.mainline_diameter mm	mm	mm
Towed object and weight (kg)		Object ws.tow_object Weight ws.object_weight	Object Weight . kg	Object Weight . kg
Type and number of connectors		Type ws.connector_type Number ws.connector_number	Type Number	Type Number
Streamer Details (if present)	Number of branched streamers and maximum gap (m)	Number ws.streamer_number Max Gap ws.streamer_max_gap	Number Max Gap .	Number Max Gap .
	Number of branches per streamer	Min ws.streamer_min_branches Max ws.streamer_max_branches	Min Max	Min Max
	Streamer length (m)	Min ws.streamer_min_length Max ws.streamer_max_length	Min . Max .	Min . Max .
	Streamer diameter (mm)	Min ws.streamer_min_dia Max ws.streamer_max_dia	Min mm Max mm	Min mm Max mm
Extent (m) of scarer and maximum gap (mm) of main line visible material		Extent ws.extent_distance Max Gap ws.material_max_dia	Extent . Max Gap	Extent . Max Gap
Length of main line visible material (mm)		Min ws.mainline_visible_min_lgth Max ws.mainline_visible_max_lgth	Min Max	Min Max
Colours (list all)		ws.colours		
Materials (list all)		ws.materials		
		Comments: ws.comments	**Comments:**	**Comments:**

3. This form is page number ____ for this trip. Is this form the last page for this trip? → Yes ☒ No ☐

Bird Baffler Details Form (Version 1 - Sept 2007)

1. Trip Information

Trip Number	Observer(s)
bb.trip_number	bb.obs1 and bb.obs2

2. Measurement Summary

Equipment Code	Date measured dd/mm/yy	Reason for measuring	Type of record (full or partial)
B (bb.equipment_code)	bb.measure-date	bb.measure-reason	Full / Partial based on B (bb.measure-type, bb.based-on)

3. Measure and record details for each of the 4 possible booms.

	Method A/C/E	1. PORT, SIDE	2. PORT, AFT	3. STARBOARD, SIDE	4. STARBOARD, AFT
		bb.bottom_position			
		Present / Absent	Present / Absent	Present / Absent	Present / Absent
Attachment Location	bb.method_attach_location	bb.boom_present; Distance from stern bb.boom_location	Distance from side . m	Distance from stern . m	Distance from side . m
Angle from Dead Astern (degrees)	E bb.method_angle	bm.boom_angle °	°	°	°
Distance to Innermost Dropper (m)	bb.method_inner_dropper	bm.inner_dropper . m	. m	. m	. m
Distance to Outermost Dropper (m)	bb.method_outer_dropper	bm.outer_dropper . m	. m	. m	. m
Number of Droppers and Webbing Type (R,F,N)	bb.method_outer_dropper	bm.droppers_number Number / Type bm.webbing_type	Number / Type	Number / Type	Number / Type
Maximum Dropper Spacing (m)	bb.method_spacing	bm.max_spacing . m	. m	. m	. m
Dropper line length (m)	bb.method_line_lenght	bm.line_lenght . m	. m	. m	. m
Dropper object length (m)	bb.method_object_lenght	bm.object_length . m	. m	. m	. m
Distance between sea surface and bottom of dropper object (m)	E bb.method_surface	bm.surface_lenght . m	. m	. m	. m
Dropper material types (list all)		bm.material-types			
Dropper material colours (list all)		bm.material-colours			

4. Additional Comments

bb.comments

This form is number ☐ for this trip. Is this form the last page? → Yes ☒ No ☒

1. Write the trip number [tr.trip_number / tl.trip_number]

Tori Line Details Form (Version 1 - Jan 2007)

2. Describe one tori line in each column and assign it a unique code. If a tori line is changed during the trip, record it in a new column.

Tori line equipment code	T tl.equipment_code	T	T
Observer(s)	tl.obs1 [ob.observer_key] and . tl.obs2	. and .	. and .
Date Measured (dd/mm/yy)	tl.measure_date	/ /	/ /
Reason for Measuring	tl.measure_reason		
Type of record (full or partial)	X Full X Partial based on T tl.based_on tl.measure_type	X Full X Partial based on T	X Full X Partial based on T
Line diameter (mm) and length (m)	Diameter tl.line_diameter Length tl.line_lenght	Diameter Length	Diameter Length
Attachment location measured from reference point (m)	Measured from tl.reference_point Port/Starboard tl.reference_location; Port (P) or Starboard (S) . tl.side_code; Forward (F) or Aft (A) tl.distance_side; Above (A) or Below (B) .	Measured from on Port/Starboard; Port (P) or Starboard (S) .; Forward (F) or Aft (A) tl.distance_along tl.along_code .; Above (A) or Below (B) .	Measured from on Port/Starboard; Port (P) or Starboard (S) .; Forward (F) or Aft (A) .; Above (A) or Below (B) tl.distance_vertical tl.vertical_code
Towed object and size (optional)	Object tl.tow_object Size tl.object_size .	Object Size .	Object Size .
Number of streamers and maximum gap (m)	Number tl.streamers_number Max Gap tl.maximum_gap	Number Max Gap .	Number Max Gap .
Number of branches per streamer	Min tl.minimum_branches Max tl.maximum_branches	Min Max	Min Max
Streamer length (m)	Min tl.minimum_length Max tl.maximum_length	Min . Max .	Min . Max .
Streamer diameter (mm)	Min tl.minimum_dia Max tl.maximum_dia	Min Max	Min Max
Streamer colours (list all)	tl.colours		
Streamer materials (list all)	tl.materials		
	Comments: tl.comments	**Comments:**	**Comments:**

3. This form is page number [ ] for this trip. Is this form the last page for this trip? → Yes [X] No [X]

Tori line details form

(v4 14 November 2019)

Fisheries New Zealand
Tini a Tangaroa

Page___of___

Trip number	Observer code	Vessel name	Date measured (dd/mm/yy)
	.		/ /

If multiple tori lines were used, complete a separate form for each tori line.
Give each tori line a gear code starting with "T1".

Tori line gear code	Reason for measuring*	Type of record*
T		based on T

Tori mainline

Line length	Line diameter	Aerial extent	Recovery rope (Y/N)
m	mm	m	

Attachment point** Tension release (Y/N)

Height above water	Distance (laterally) from centre of the stern	Distance from stern to attachment point	Adjustable (Y/N)
m	. m to port (P) or starboard (S)	. m	

Dual attachment point (if applicable) Tension release (Y/N)

Height above water (m)	Distance (laterally) from centre of the stern
	. m to port (P) or starboard (S)

Distance from join (if present) to				Streamers between second attachment point and join (Y/N)
Stern	m	Attachment point	m	

Long streamers Y/N Material*

Max dist between long streamers	Paired or single	Number of long streamers/pairs	Max length	Min length	Diameter	Colour code*
m	(P/S)		. m	. m	mm	

Distance to first long streamer that reaches water	Long streamers cover aerial extent (Y/N)	Number of long streamers that touch water
m		

Light streamers Y/N Material*

Distance between light streamers	Paired or single	Number of light streamers/pairs	Max length	Min length	Diameter	Colour code*
m	(P/S)		. m	. m	mm	

Towed object (used to induce drag)

Towed object Y/N	Towed object code*	Size of towed object*
		.

*** Refer to instructions on reverse.**

Comments

Observer SLED Details Form (Version 3 - Jan 2010)

1. Write the trip number sd.trip_number , vessel name [tr.vessel_key] and observer code/s sd.obs1 and sd.obs2

2. Measurement summary

Equipment code	Type of record (full or partial)	Date measured dd/mm/yy	Reason for measuring (code)
S (sd.equipment_code)	**F**ull **P**artial based on S (sd.measure_type, sd.based_on)	sd.measure_data	**I**nitial / **D**amaged / **R**epaired / **O**ther (sd.measure_reason)

3. Grid

Grid ID number	Grid type	Grid shape	Maximum grid width (mm)	Minimum steel diameter (mm) Frame	Bar
sd.grid_id	**2** section / **3** section / **O**ther (sd.grid_type)	**O**val / O**b**long / **S**quare (sd.grid_shape)	sd.grid_max_width	sd.frame_min_dia	sd.bar_min_dia

Section	Maximum height (mm)	Grid bar spacing (mm) 1	2	3	4	5	6	7	8	9	10	sd.space_number 12	13	14	15
1 (sd.section)	sd.section1_max_height										sd.space_mm				
	sd.section2_max_height														
3	sd.section3_max_height														

4. Escape Hole

Width at base (mm)	Length (mm)
sd.escape_hatch_width	sd.escape_hatch_length

5. Hood

Width (mm)	Height (mm)	Length (mm)	Mesh size (mm)	Leading edge Rope (mm)	Float number
sd.hood_width	sd.hood_height	sd.hood_length	sd.hood_mesh	sd.hood_edge_rope	sd.hood_floats

6. Lengthener

Mesh size (mm)	Net type
sd.lengthener_mesh	**2** seam / **4** seam (sd.lengthener_type)

8. Comments

sc.comments

7. Kite

Length (mm)	Width (mm)	Continuously Stitched?
sd.kite_length	sd.kite_width	**Y**es / **N**o (sd.kite_stitch)

Observer Benthic Materials Form (Version 2 - July 2008)

1. Benthic Material includes all **Sessile** marine invertebrates, marine plants and/or structures that are found on the seafloor. You should complete a **separate row** for each individual identifiable item or group.

2. Write the trip number [tr.trip_number] and Observer code/s (*first letter of first name then first three letters of surname*) [. ob.trip_observer_key] and [.]

Sample ID	Tow/Set number	MFish code	End Type	Weight (kg)	Method of analysis		Life status	Links		Number or Quantity (code)		Image (Y/N)	Comments
B yb.sample_id	fi.station_number	fc.species	fc.discard_status	fc.greenweight .	fc.weight_method_part1	fc.weight_method_part2	yb.life_status	yb.links_part1	yb.links_part2	fc.number_of_fish	or yb.material_quantity	yb.material_quantity	yb.observer_comment
B				.							or		
B				.							or		
B				.							or		
B				.							or		
B				.							or		
B				.							or		
B				.							or		
B				.							or		
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B				.							or		
B				.							or		
B				.							or		
B				.							or		
B				.							or		
B				.							or		

3. This form is page number [ ] for this trip. Is this form the last page for this trip? ⟶ Yes [X] No [X]

Vessel Activity Log

Name of observer [ob.observer_key] Name of vessel ev.vessel_key Observer trip number pa,trip_number [pa.trip_key] Page ____ of ____

pa.station_number ev.event_key

Trip Day	Date (dd/mm/yy)	Activity code	Set no.	Start time (24hr clock)	End time (24hr clock)	Latitude (DD°MM.m') S	Longitude (DDD°MM.m')	E W	Port	Beau-fort Scale	School		Target species	FMA	Aircraft callsign	Comments
											Assoc.	Detect.				
pa.trip_day	ev.event_start_date	pa.activity	pa.set_number	ev.event_start_time	ev.event_end_time	ev.start_latitude	ev.start_longitude		pa.port	pa.beaufort	pa.school_association	pa.school_detected	pa.school_species		pa.aircraft_callsign	
	/ /			:	:	° . - S	° .									
	/ /			:	:	° . - S	° .									
	/ /			:	:	° . - S	° .									
	/ /			:	:	° . - S	° .									
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	/ /			:	:	° . - S	° .									
	/ /			:	:	° . - S	° .									
	/ /			:	:	° . - S	° .									

Additional comments:

pa.comments or tc.trip_comments

ACTIVITY CODES

1 Set (fishing activity)
2 Searching (for school)
2a Steaming (to spotted school)
3 Transit (to/from port or fishing destination)
4 No fishing - breakdown/maintenance
5 No fishing - bad weather
5a No fishing - waiting for sighting
6 In port - landing/offloading catch
6a In port - awaiting departure
7 Net cleaning set
8 Investigate school
11 No fishing - drifting/anchored at day's end
13a No fishing - other (specify).....
13b No fishing - other (specify).....

S1 Spotter plane takes off to search
S1a Spotter plane radios in sighting
S2 Spotter plane returns from search

H1 Helicoptor takes off to search
H2 Helicopter returned from search

16O Other:.....

NOTE: if for any reason the activity was unobserved (i.e. details relayed to you from a crew member), please prefix the code with an "**X**".

SCHOOL ASSOCIATION

A 1 Unassociated
A 2 Feeding (on baitfish / krill)
A 3 Drifting log, debris, dead animal
A 4 Drifting raft, FAD or payao
A 5 Anchored raft, FAD or payao
A 8 Other:.....
A 9 Bird associated

SCHOOL DETECTED

D 1 Seen from vessel
D 2 Seen from spotter aircraft
D 3 Marked with beacon
D 4 Bird radar
D 5 Sonar / depth sounder
D 6 Info. from other vessel
D 8 Other:.....

PURSE SEINE CATCH EFFORT SET DETAILS

CELR No. ps.celr_no

Date Day Month Year — ev.event_start_date

v1.4

Set Detail

Set No.	Method	Target Species	FMA	Spotter Call sign	Target School: Assoc	Target School: Detect	Latitude (vessel position)	Longitude (vessel position)	Sea surface Temp. °C	Seabed Depth m	Sea State
ps.set_number	fi.fishing_method	fi.target_species		As on pa (x purseseine_activity)			Deg Min: ev.start_longitude S	Deg Min E/W: 1 ev.start_latitude	ps.sea_temperature	fi.start_seabed_depth	fi.beaufort_scale

fi.sequence_number

Time NZST

Start of Set (skiff off)	TIME	Begin Pursing (winch on)	TIME	End Pursing (rings up)	TIME	Net Rolling	TIME	Net Sacking	TIME	Begin Brailing	TIME	End Brailing	TIME	End of Set (skiff on board)	TIME
ps.start_set	ps.start_set_code	ps.begin_purse	ps.begin_purse_code	ps.end_purse	ps.end_purse_code	ps.net_rolling	ps.net_rolling_code	ps.net_sacking	ps.net_sacking_code	ps.begin_brail	ps.begin_brail_code	ps.end_brail	ps.end_brail_code	ps.end_set	ps.end_set_code

Total Catch

Total GW at surface (kg)	Method	Total GW on board (kg)	Method	Result code	Brail type
fi.total_surface_greenweight	fi.total_surface_greenweight method	fi.total_onboard_greenweight	fi.total_onboard_greenweight method	ps.result_code	ps.brail_code

Losses

Total losses (kg)	Method	Loss code	event stage	Time catch lost	TIME CODE
ps.total_losses	ps.loss_method	ps.loss_code	ps.loss_stage	ps.loss_time	ps.loss_time_code

Other sampling this set

MDBD	I-f	bird obs	NFB
ps.mdbd_yn (Y/N)	ps.lf_yn	ps.birds_obs	ps.nfb_yn

Non-fish Bycatch

mammal	seabird	turtle
ps.mammal	ps.seabird	ps.turtle

Losses

Total losses (kg)	Method	Loss code	event stage	Time catch lost	TIME CODE

Catch Details

SPECIES name	SPECIES code	Processed State	Hold No.	Greenweight (kg)	Tag
	fc.species	fc.discard_status		fc.greenweight	fc.weight_method_part1 fc.weight_method_part2

SPECIES name	SPECIES code	Processed State	Hold No.	Greenweight (kg)	Tag

COMMENTS ps.comment_ce

SPECIES CODES (target and common bycatch)

ALB	Albacore tuna	FTU	Frigate tuna	PIL	Pilchard	STM	Striped marlin
ANC	Anchovy	JMA	Jack mackerel	POP	Porcupine fish	STN	Sth bluefin tuna
BAR	Barracouta	KAH	Kahawai	RBM	Ray's bream	STR	Stingray
EMA	Blue (English) mackerel	KIN	Kingfish	SKJ	Skipjack tuna	STU	Slender tuna
FLY	Flying fish	MAK	Mako shark	SNA	Snapper	SUN	Sunfish
FRO	Frostfish	MJA	Manta ray	SQU	Arrow squid	TRE	Trevally

Processed States

GRE	Green (whole) *(specify hold destination)*
EAT	Galley (eaten)
DIS	Discarded
RET	Retained (specimen)
FIN	Fins (sharks)

Result Codes

1	Entire school caught (on board)
2	Some caught / some lost
3	Skunked (entire school lost)
5	Caught unknown amount
6	Catch let go
8	Transferred/transhipped

SEABIRD WARP-STRIKE OBSERVATIONS (TRAWL)

1. Fishing event descriptors

Observer trip number: wa.trip_number | Observer tow no.: wa.station_number | TCEPR form number: wa.tcepr_number wa.tcepr_tow | Page ____ of ____ for this tow

Date tow ended: wa.tow_date | Tow start time: wa.tow_start_time | Tow start time code: wa.time_code | Observer initials: ss.obs_initials | Side observed: P / S ss.side_observed

2. Fifteen-minute warp/mitigation device strike observations and bird abundance

	Sampling period 1 ss.sample_number		*Sampling period 2*		*Sampling period 3*		*Sampling period 4*	
Observed	Warp / Mitigation device: ss.warp_or_decive_observation		Warp / Mitigation device:		Warp / Mitigation device:		Warp / Mitigation device:	
	Time Start	*Time End*	*Time Start*	*Time End*	*Time Start*	*Time End*	*Time Start*	*Time End*
15-Minute Observation	ss.time_start	ss.time_end						
	Large birds	*Small birds*	*Large birds*	*Small birds*	*Large birds*	*Small birds*	*Large birds*	*Small birds*
Bird abundance	ss.large_birds	ss.small_birds						
No. heavy contacts	ss.contacts_large	ss.contacts_small						

3. Mitigation devices and environmental factors

Mitigation equipment codes	wd.device_type			
Mitigation event codes	me.event_code			
Swell height (m)	ss.swell_ht			
Swell direction (1-12 h)	ss.swell_dir			
Wind speed (Beaufort)	ss.wind_speed			
Wind direction (1-12 h)	ss.wind_dir			
Discharge side	P / S / B / N ss.discharge_side	P / S / B / N	P / S / B / N	P / S / B / N
Discharge rate	0 / 1 / 2 / 3 ss.discharge_rate	0 / 1 / 2 / 3	0 / 1 / 2 / 3	0 / 1 / 2 / 3
Discharge type *	S / M / C / O / D ss.discharge_type	S / M / C / O / D	S / M / C / O / D	S / M / C / O / D

*several types permissible

Codes for use in completing this form

Discharge rate:
Record one only
0 = none
1 = negligible
2 = intermittent
3 = continuous

Discharge type:
Record one or more
S = sump water
M = minced
C = cutter pump
O = offal, i.e. heads and guts
D = discards of whole fish.

Elsewhere:
P = Port
S = Starboard
B = Both

N = Neither / None / No
Y = Yes
U = Unknown

Form version: 24/08/2007

4. Comments : Record anything that may result in a sample being removed from the analysis, e.g. gear failure or the environmental or fishing factors changed, or the vessel does a turn meaning that the conditions, such as wind direction changes during the sampling period

Sample 1	ss.comments
Sample 2	
Sample 3	
Sample 4	

Beaufort Scale of Wind Force

Beaufort Number	Descriptive term	Mean wind speed (knots)	Probable wave height * (m)
0	Calm	<1	
1	Light air	1 - 3	0.1 (0.1)
2	Light breeze	4 - 6	0.2 (0.3)
3	Gentle breeze	7 - 10	0.6 (1.0)
4	Moderate breeze	11 - 16	1.0 (1.5)
5	Fresh breeze	17 - 21	2.0 (2.5)
6	Strong breeze	22 - 27	3.0 (4.0)
7	Near gale	28 - 33	4.0 (5.5)
8	Gale	34 - 40	5.5 (7.5)
9	Strong gale	41 - 47	7.0 (10.5)
10	Storm	48 - 55	9.0 (12.5)
11	Violent storm	56 - 63	11.5 (16.0)
12	Hurricane	64 and over	14 (-)

* This table is intended as a rough guide for the open sea. Figures in brackets indicate the probable maximum wave heights. In coastal areas greater heights will be experienced.

Mitigation Event codes

Enter up to six codes indicating mitigation related events that you observed during the observation period:

A = Tori line observed to be continuously slack (i.e. not taut) for some of the time that it was deployed

B = Aerial extent of Tori line observed to extend less than about 10m beyond the warp for some of the time

C = Tori line observed to have tangled streamers for some of the time that it was deployed

D = Tori line main-line observed to be entangled with a warp, or another Tori line, for some of the time

E = Streamers of Tori line observed not to reach to waterline, allowing for wind and swell

F = A delay between when the brakes went on and when the Tori line was deployed (specify in Comments)

G = A delay between when the Tori line was removed and when hauling began (specify in Comments)

H = Warp scarer main-line top connector observed to be set more than 4 metres from the stern

J = Warp scarer main-line observed to be entangled with the warp, for some of the time that it was deployed

K = Warp scarer streamers (if present) observed not to reach the waterline.

L = Warp scarer observed to have tangled streamers (if present) for some of the time that it was deployed

M = Warp scarer observed to snag when warp length is adjusted

N = A delay between when the brakes went on and when the Warp scarer was deployed (specify in Comments)

O = A delay between when the Warp Scarer was removed and when hauling began (specify in Comments)

P= The bottom connector on the Warp scarer is between 2 and 5 metres (measured along the warp) of the point where the warp enters the water (allowing for wind and swell)

Q = The bottom connector on the Warp scarer is further than 5 metres (measured along the warp) away from the point at which the warp enters the water

R = Bird baffler dropper lines observed to be tangled for some of the time that was deployed

S = Strong winds are having a negative impact on the effectiveness of the mitigation equipment

T = Part of a mitigation device was observed to be damaged or lost. Make a comment to explain what happened

U = A whole mitigation device was lost part-way through, or malfunctioned during, the fishing event. If it is replaced you should complete a new mitigation details form. Make a comment to explain what happened

Y = More than six mitigation events, or mitigation events not covered by existing codes –document in comments section

Observer Setnet Gear Form (Version 2)

Trip number	Obs code
sg.trip_number	sg.observer_code

1. Complete one section for each distinct net used

Net ID	Height of net (m)	Mesh size (mm)	Float size (mm)	Max float spacing (m)	Ground weight (g)	Max weight spacing (m)	Max pinger spacing (m)	Length (m)
sg.net_id	sg.net_height	sg.net_mesh_size	sg.float_size	sg.max_float_spacing	sg.ground_weight	sg.max_weight_spacing	sg.max_pinger_spacing	ns.net_length
Comments								

Net ID	Height of net (m)	Mesh size (mm)	Float size (mm)	Max float spacing (m)	Ground weight (g)	Max weight spacing (m)	Max pinger spacing (m)	Length (m)
Comments	sg.comments							

Net ID	Height of net (m)	Mesh size (mm)	Float size (mm)	Max float spacing (m)	Ground weight (g)	Max weight spacing (m)	Max pinger spacing (m)	Length (m)
Comments								

Net ID	Height of net (m)	Mesh size (mm)	Float size (mm)	Max float spacing (m)	Ground weight (g)	Max weight spacing (m)	Max pinger spacing (m)	Length (m)
Comments								

Net ID	Height of net (m)	Mesh size (mm)	Float size (mm)	Max float spacing (m)	Ground weight (g)	Max weight spacing (m)	Max pinger spacing (m)	Length (m)
Comments								

Net ID	Height of net (m)	Mesh size (mm)	Float size (mm)	Max float spacing (m)	Ground weight (g)	Max weight spacing (m)	Max pinger spacing (m)	Length (m)
Comments								

Net ID	Height of net (m)	Mesh size (mm)	Float size (mm)	Max float spacing (m)	Ground weight (g)	Max weight spacing (m)	Max pinger spacing (m)	Length (m)
Comments								

Net ID	Height of net (m)	Mesh size (mm)	Float size (mm)	Max float spacing (m)	Ground weight (g)	Max weight spacing (m)	Max pinger spacing (m)	Length (m)
Comments								

Observer Setnet Catch/Effort Form
(Version 2)

1. Set Information

Vessel C/E Return number	Trip number	Set number	Target species
fi.ce_fishing_event_key	se.trip_number [ev.trip_key]	se.set_number [ev.event_key]	fi.target_species

2. Start of Setting

Setting observed?	Date dd/mm/yy	Time 24-hr clock	Latitude Degrees Minutes		Longitude Degrees Minutes E/W		Bottom depth (m)
se.set_observed	ev.event_start_date	ev.event_start_time	ev.start_latitude	S	ev.start_longitude		fi.start_seabed_depth

3. Additional Setting details

Net set on bottom?	Net clean?	Offal discharge	Whole fish discharge	Interruption time (min)	Beaufort number
se.net_set_on_bottom	se.net_set_clean	fi.shot_offal_discharge	fi.shot_fish_discharge	se.set_interrupt_time	fi.beaufort_scale

4. Gear used this Set

Net IDs from Gear Form
ns.net_id
Total spacer length (m)
se.total_spacer

5. End of Setting

Time 24-hr clock	Latitude Degrees Minutes		Longitude Degrees Minutes E/W	Bottom depth (m)
ev.event_end_time	ev.end_latitude	S	ev.end_longitude	fi.end_seabed_depth

6. Start of Hauling

Haul observed?	Date dd/mm/yy	Time 24-hr clock	Hauled backwards?	Beaufort number
se.haul_observed	se.start_haul_date, se.haul_date_time	se.start_haul_time	se.end_hauled_first	se.haul_beaufort

7. End of Hauling and Additional details

Time 24-hr clock	Offal discharge	Whole fish discharge	Interruption time (min)	Non-fish bycatch?	Benthic materials?
se.end_haul_time	fi.haul_offal_discharge	fi.haul_fish_discharge	se.haul_interrupt_time	fi.nonfish_bycatch	fi.benthic_material

8. Greenweight Catch

Species code	End Type	Greenweight (kg)	Method of analysis	
fc.species	fc.discard_status	fc.greenweight	fc.weight_method_part1	fc.weight_method_part2

Species code	End Type	Greenweight (kg)	Method of analysis	

Biological sampling: Number of species sampled	se.bio_samples

9. Additional Comments

se.comments

Observer Trolling Fishing Gear Form (Version 1 - Dec 2006)

1. Trip and observer Information

Trip number	Observer code
tr.trip_number	ob.observer_key

2. Vessel information

Registration Number of Vessel	Vessel Name
	[tr.vessel_key]

3. Details about fishing gear used during the entire trip

Hooks

ID	Size (mm)	Type	Barbs	Material
ho.hook_id	ho.hook_size	ho.hook_type	ho.hook_barbs	ho.hook_material
C				
D				
E				
F				
G				
H				
I				
J				
K				

Heads

ID	Weight (oz)	Length (mm)	Shape
[th.head_id]	[th.head_weight]	[th.head_length]	[th.head_shape]
C			
D	.		
E	.		
F	.		
G	.		
H	.		
I	.		

Skirts

ID	Material	Length (mm)	Colour/Description
hs.skirt_id	hs.skirt_material	hs.skirt_lengh	hs.skirt_description
C			
D			
E			
F			
G			
H			
I			
J			
K			
L			
M			
N			
O			
P			
Q			
R			
S			
T			
U			
V			

4. Comments

fg.gear_comment

Observer Trolling Hourly Observation Form

(Version 1 - Dec 2006)

1. Enter the trip and Observer Information

Trip number	Date dd/mm/yy	Observer code
ev.trip_number	/ / ev.event_start_date	ob.observer_key

2. Enter the vessel information

Registration Number of Vessel	Vessel Name
	[ev.vessel_key]

3. Enter position, effort, and environmental conditions observed at the **start** of the observation period

Start Time 24-hr clock	Obs Y/N	Latitude Degrees Minutes N/S	Longitude Degrees Minutes E/W	FMA	Target Species	Number of lines being fished	Vessel Speed (kts)	Wind Speed (kts) Dir	Sea State	Cloud Cover	Sea Surface Temp (°C)
:	fi.observed_yn	° ' ev.start_latitude .	° ' ev.start_longitude .		fi.target_species	to.lines_fished	fi.fishing_speed .	to.wind_speed	fi.beaufort_scale	to.cloud_cover /8	. to.surface_temperature

4. Record catch for this period

Species code	Retained Tally	Retained Total	Not Retained Tally	Not Retained Total
A L B				
S K J				
R B M				
fc.species		fc.number_of_fish		fc.number_of_fish

Was there non-fish bycatch during this period? Yes ☐ No ☐ fi.nonfish_bycatch

5. Record activities that occur during this period

Activity code	Time 24-hr clock	Details
	:	
	:	
fv.event_code	. fv.event_time	
		fv.event_comment
	:	
	:	
	:	
	:	
	:	

6. Comments

to.troll_comment

7. This form is page number ☐☐ for this date. If this is the last form for the date, enter the end of fishing time here (24-hr clock) → to.fishing_end_time

Observer Non-fish Bycatch Form (Version 3 - Jun 09)

1. Non-fish bycatch includes seabirds, marine mammals and marine reptiles. Complete a **separate row** for each individual animal caught in a fishing event.

2. Write the trip number nc.trip_number and Observer code/s (*first letter of first name then first three letters of surname*) [ob.observer_key] . and .

Sample number	Tow/Set number	Start date of tow/set dd/mm/yy	Species code	Capture method	Life status	Injury status	Length (cm)	Sex	Tag number you put on	Codes for samples taken	End status	Comments
nc.specimen_number	nc.station_number	/ / nc.s_date	nc.observer_species	nc.capture_method	nc.alive_code	nc.injuries	nc.length_cm	nc.observer_sex_code	nc.tag_id	nc.samples_taken	nc.marked_code	nc.remarks
		/ /										
		/ /										
		/ /										
		/ /										
		/ /										
		/ /										
		/ /										
		/ /										
		/ /										
		/ /										
		/ /										
		/ /										
		/ /										
		/ /										

3. This form is page number . for this trip. Is this form the last page for this trip? ⟶ Yes X No X

Observer Protected Species Interaction Form

Fisheries New Zealand
Tini a Tangaroa

(31 July 2019)

trip_number

Page___of___

Write the trip number | | | | | Were there protected species interaction(s) for this trip (Y/N) |

1. Protected species includes seabird, marine mammals, marine reptiles and protected fish/sharks (for a full list of species to be included, consult the observer manual). Protected corals are still to be recorded on the Benthic materials form.
2. Protected species interactions are deemed to have occurred when animal(s) have become fixed, entangled or trapped so that is prevented from moving freely or freeing itself. A bird which lands on the vessel, and leaves the vessel **without assistance** from yourself/crew should not be recorded on this form.
3. Complete a **separate entry** for each individual interaction.
4. If the protected species interaction is an impact /landing interaction type, record negative one (-1) for tow/set numbers not associated with fishing events and 'L' for the interaction type.
5. Tick the appropriate box to indicate whether any protected species interactions occurred during this trip.

Interaction number	On duty (Y/N)	Witnessed interaction (Y/N)	Animal seen (Y/N)	Tow/set number	Observation date	Observation time	Species code	Life status when first sighted*	Interaction type*	Only complete these sections if interaction type is "F" or "M"		Injury/ bodily status*	Length (cm)	Measurement method A or E	Sex	CSP tag number you attached	Codes for samples taken*	End status*
										Location of capture*	Part of body*							
				tow_number	/ s_date /	caught_time :	observer_species			capture_method	body_part(new)	injuries	length_cm			tag_id	samples_taken	
Tag number or marking on animal at time of capture				tag_capture (new)	Image file name	image		Observer code		.		Comments	remarks					

specimen_number
on_duty(new)
witnessed(new)
animal_seen(new)
alive_code
interaction_type
measure_method
observer_sex_code
marked_code

Note: all columns come from stage table y_nfb_nonfish_catch

Page		of	

CONVERSION FACTOR DATA (Non-Fillet States)

MINISTRY OF FISHERIES
Te Tautiaki i nga tini a Tangaroa

Trip Code	[cf.trip_key]	Vessel	[tr.vessel_key]	Species	cf.species	State	cf.processed_state_code MA	

Side view of cut, include gills, gill covers etc	cf.machine_type_name	Top View of Cut

Description of Cut: _____

_____

Tow / Set No.	Length Range (cm) Min	Length Range (cm) Max	Tail Cut (mm) Min	Tail Cut (mm) Mean	Tail Cut (mm) Max	No. of Fish	Greenweight (kg)	Scales Used G	Scales Used P	No. of Processed Units	Processed Weight	Process Equip.	C F	Valid Y / N	Test Type	Obs. Initial
[cf.fishing_event_key]	cf.min_length	cf.max_length	cf.min_tail_cut		cf.max_tail_cut	cf.number_of_fish	cf.greenweight	cf.scales_used_gw_code	cf.scales_used_pw_code	cf.processed_units_number	cf.processed_weight	cf.processing_equipment_code	cf.conversion_factor	cf.valid_test_yn	cf.test_type	
TOTALS																

COMMENTS: (Write comment for each test) _____ cf.conversion_factor_comment (each test should have a comment) _____

_____

MINISTRY OF FISHERIES
Te Tautiaki i nga tini a Tangaroa

Page		of	

CONVERSION FACTOR DATA (Fillet States)

Trip Code	[cf.trip_key]	**Vessel**	[tr.vessel_key]	**FMA**	
Species	cf.species	**State**	cf.processed_state_code **Machine Type**	cf.machine_type_name	

Side view of cut, include gills, gill covers etc. Show Fillet cut as dotted lines.	Written Description of Fillets / Portions Produced

Tow / Set No.	Length Range (cm) Min	Max	Tail Cut (mm) Min	Max	No. of Fish	Greenweight (kg)	Scales Used G	P	No. of Processed Units	Weight Post Baader/Trio	Weight Post Trimming	Trimming Weight	Process Equip.	CF	Valid Test Y / N	Test Type R / NR	Obs Initial
[cf.fishing_event_key]	cf.min_length	cf.max_length	cf.min_tail_cut	cf.max_tail_cut	cf.number_of_fish	cf.greenweight	cf.scales_used_gw_code	cf.scales_used_pw_code	cf.processed_units_number	cf.post_machine_weight	cf.processed_weight	cf.trimming_weight	cf.processing_equipment_code	cf.conversion_factor	cf.conversion_factor	cf.valid_test_yn	cf.test_type
Totals																	

COMMENTS: (Write comment for each test) cf.conversion_factor_comment (each test should have a comment)

Version 0106

STOCK MONITORING PROGRAMME
LENGTH FREQUENCY – OBS (1997 Edition)

Trip code: tr.trip_number fi.station_number | Tow number | Year | S M L F

Sample selection method: Approx SRS=5, Whole catch=9 | Weighing method | Sample weight: cs.sample_weight | cs.sample_weight_method_code

lf.length_measure_code — Measurement method: FL : 1, TL : 2, SL : 3

Species code: lf.species

Vessel:_____ Recorder:_____ Species:_____

Date:_____ Time Sampled:_____ Area:_____

Comments:_____ No. otoliths collected:_____

Length (cm)	Male	Female	Not sexed
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			

LF TALLY				GONAD TALLY				
Length (cm)	Total males	Total females	All measured	Tot. fem. Stage 1	Tot. fem. Stage 2	Tot. fem. Stage 3	Tot. fem. Stage 4	Tot. fem. Stage 5
lf.length 0	lf.male_number	lf.female_number	lf.all_fish_number	lf.female_stage1	lf.female_stage2	lf.female_stage3	lf.female_stage4	lf.female_stage5
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
TOTAL								

STOCK MONITORING PROGRAMME
MIDDLE DEPTH BIOLOGICAL DATA (1997 Edition)

Vessel ..... Measurement method Recorder .....

Trip code [bi.trip_key] Year O

M D B D

FL : 1
TL : 2
SL : 3 bi.length_code
Orbit : B

Species ..... bi.species

Shot number	Fish number	Length (cm)	Sex	Stage	Otolith	Weighing method	Sample weight (kg)	Shot number	Fish number	Length (cm)	Sex	Stage	Otolith	Weighing method	Sample weight (kg)
fi.station_number	bi.fish_number	bi.fish_length	bi.fish_sex_code	bi.gonad_code	bi.age_material_collected or bi.shell_state	cs.sample_weight_method_code	bi.fish_weight or cs.sample_weight								

Code	Sex	Female Gonad type	Otolith	SCI eggs use stage col.	SCI eggs use Otolith col.
0	—	—	No	—	Soft
1	Male	Resting	Yes	None	Hard
2	Female	Ripening	—	Blue	—
3	Unsexed	Mature	—	Orange	—
4	—	Running	—	Rose	—
5	—	Spent	—	—	—

Comments (area etc) _____

Vulnerable Marine Ecosystem Evidence Process

Fisheries New Zealand
Tini a Tangaroa

(v3 February 2020)

1. Trip, tow, and vessel information

Trip number	Tow number	Observer/s	Name of vessel master

2. Date, time, and position fishing commenced (net reaches target depth) and end (net leaves target depth)

	Date (dd/mm/yy)	Time (NZST 24hr)	Depth (m)	Latitude	Longitude	E/W
Start	/ /	:		° . 'S	° . '	
End	/ /	:		° . 'S	° . '	

3. Relevant taxonomic groups, weights, and scores

Taxonomic Group	Species code	Method of Weighing	Weight (kg)	(Annex A) Threshold Limit (kg)	(Annex B) Weight Limit (kg)
PORIFERA Sponges	ONG		.	50	5
CNIDARIA					
Anthozoa (class) Anemone, coral and sea pens					
Scleractinia (order) Stony corals	SIA		.	80	5
Antipatharia (order) Black corals	COB		.	5	1
Alcyonacea (order) Soft corals	SOC		.	60	1
Gorgonacea (Informal group) Sea fans octocorals	GOC		.	15	1
Hydrozoa (class) Hydroid					
Pennatulacea (order) Sea pens	PTU		.		1
Actiniaria (order) Sea anemones	ATR		.	40	5
Anthoathecatae (order)					
Stylasteridae Hydro corals	COR		.		1
ECHINODERMATA					
Brisingida (order) Armless stars	BRG		.		1
Crinoidea (class) Sea lillies	CRI		.		1

If there are any ticks in Threshold limit checkbox column the event is considered an encounter and the encounter protocol must be applied. If there are three or more ticks in Weight limit checkbox column the event is considered an encounter and the encounter protocol must be applied.

4. Vessel notification

As soon as the form is completed for any tow provide a copy to the person in charge of the vessel.

Name (if not vessel master)	Received by person in charge (signature)	Date received (dd/mm/yy)	Time received (NZST 24hr)
		/ /	:

Bottom longline gear form

(v2 July 2020)

Fisheries New Zealand
Tini a Tangaroa

Page___of___

Trip number	Observer code	Gear code*	Vessel name

Main line

Material*	Diameter (mm)	Integrated weight line (gm)	Average main line weights (kg)	Max float diameter (cm)

Drop line length (m) (Drop/Dahn line only)	Number of hooks between surface float and anchor	Distance between subsurface floats (m)

Weighting

Weight under subsurface floats (kg)	Subsurface float weight material*	Average distance between weights (m)	Weight material*	Number of hooks between weights	Dropper length (m)

Branch line

Material*	Snood length (cm)	Snood spacing (m)

Hooks

Hook type*	Hook size	Method of baiting*

Comments

* **Refer to instructions on reverse.**

Bottom longline setting log

(v2 June 2019)

Fisheries New Zealand
Tini a Tangaroa

Page___of___

Trip number	Set number	Target species	Observer code	Vessel name
			.	

	Recorded by observer*	Date (dd/mm/yy)	Time (NZST 24hr)	Seabed depth (m)	Latitude	Longitude	E/W
Start		/ /	:		° . 'S	° . '	
End		/ /	:		° . 'S	° . '	

Conditions at the start of setting	% cloud cover	Wind direction (000-359°)	Beaufort scale*

Observed period

Period	Start time	End time	Hooks observed	% Hooks baited*
1	:	:		
2	:	:		
3	:	:		

Line set

Gear code	Number of hooks	Fishing strategy*

Fishing gear discarded (Y/N)	Entire set observed (Y/N)

Ship speed (knots)	Line setting height (m)	Line length (m)	Setting path*	Minimum hook distance from seabed (m)	Maximum hook distance from seabed (m)
.	.				

Bait

Species	Composition	State*
	%	
	%	
	%	

Distance from stern to bait entry point (m)	Lateral distance from bait entry point to tori line (m)	Bait landing inside prop wash? (Y/N/U)
Min Max		

Tori line

Used (Y/N/U)		
Attachment point	Gear code	Problem code*
Port	T	
Centre	T	
Starboard	T	

Other mitigation

Acoustic deterrent (Y/N/U)	Laser deterrent (Y/N/U)	Unnecessary deck light (Y/N/U)

Other, if Y describe in comments (Y/N)	Fish waste, bait discarded during setting*

* **Refer to instructions on reverse.**

Comments

Bottom longline hauling log

(v3 July 2020)

Fisheries New Zealand
Tini a Tangaroa

Page___of___

Trip number	Set number	Observer code	End of line hauled first*	Vessel name
		.		

	Recorded by observer*	Date (dd/mm/yy)	Time (NZST 24hr)	Seabed depth (m)	Latitude	Longitude	E/W
Start		/ /	:		° . 'S	° . '	
End		/ /	:		° . 'S	° . '	

Conditions during hauling*	Time assessed (NZST 24hr)	% cloud cover	Wind direction (000-359°)	Beaufort scale*	Vessel speed (knots)
	:		°		.

Observed period

Entire haul observed (Y/N)

Period	Start time	End time	Number of observed hooks	Period	Start time	End time	Number of observed hooks
1	:	:		2	:	:	
3	:	:		4	:	:	
5	:	:		6	:	:	

Fishing gear discarded (Y/N)
If Y describe in comments

Number of hooks lost still attached to the mainline (excluding those deliberately cut off)

Offal, bait & whole fish (discarding code*)

Position	Haul location (tick box)	Offal	Bait	Whole fish
Port				
Starboard				
Stern				

Mitigation

Water deterrent used (Y/N)	
Acoustic deterrent (Y/N)	
Bird exclusion device (Y/N)	
Other (Y/N) – If Y describe in comments	

Evidence of marine mammal predation (Y/N)

Number of fish predated

* **Refer to instructions on reverse.**

Comments

Bottom longline catch log

(v3 July 2020)

Fisheries New Zealand
Tini a Tangaroa

Trip number	Set number	Observer code	Catch assessment*	Vessel name	Page___of___

Species Code	Number of fish	Greenweight (kg)	Weighing method *	End state*

* **Refer to instructions on reverse.**

Comments

Other data forms: