CCAMLR Statistical Bulletin

The *Statistical Bulletin* is published annually and contains:

- Catch and effort statistics for all fisheries in CCAMLR's Convention Area
- Catch histories for selected fishery target species
- Trade statistics (landings and exports) of toothfish (*Dissostichus eleginoides* and *D. mawsoni*)
- Planimetric seabed areas by selected depth intervals in the Convention Area.

The catch history of krill (*Euphausia superba*) by month and small-scale management unit (SSMU) was added to the *Statistical Bulletin* in 2017 (see below). In addition, the boundary between Subareas 58.6 and 58.7 was revised in 2016 (CCAMLR-XXXV, paragraph 12.4) to simplify the management and reporting of fishery data from the French and South African Exclusive Economic Zones (EEZ) and this revision has been applied retrospectively to the entire time series of catch, effort and trade statistics.

CCAMLR's Convention Area extends from the coast of Antarctica to the Antarctic Convergence at approximately 45–60° South. The Convention Area is circumpolar and encompasses the southern sectors of the Atlantic Ocean (Statistical Area 48), Indian Ocean (Statistical Area 58) and Pacific Ocean (Statistical Area 88). Each statistical area is divided into subareas or divisions (refer https://gis.ccamlr.org).

Catch and effort statistics are based on monthly catch and effort data reported by subarea and division (known as STATLANT data). The STATLANT data are derived from haul-by-haul catch and effort data reported to the Secretariat. The STATLANT[1] data are subsequently reviewed, and sometimes amended, by the national statistics offices of CCAMLR Members, and the coverage of fishing activities includes all fisheries operating inside the Convention Area. Catches of target species and by-catch taxa are reported as green weight in metric tonnes. CCAMLR's reporting standards for catch and effort statistics support the international standards set by the Coordinating Working Party on Fisheries Statistics (https://www.ccamlr.org/en/data/partnerships).

Catches of krill by month and SSMU are based on STATLANT data which are reported at the subarea spatial level. The spatial allocation to SSMUs is based on the distribution of catches reported in the haul-by-haul data (C1 data). Where historic C1 data are missing, or insufficient to allocate catches to individual SSMUs, the catches for that month are allocated to the SSMU groups (see 'csv data files' below). SSMUs have been defined in the krill fisheries in the southwest Atlantic (Area 48) (refer https://gis.ccamlr.org) as follows:

Antarctic Peninsula (Subareas 48.1 and 48.5, SSMU group AP)
- SSMU Antarctic Peninsula East (APE)
- SSMU Antarctic Peninsula West (APW)
- SSMU Bransfield Strait East (APBSE)
- SSMU Bransfield Strait West (APBSW)
- SSMU Drake Passage East (APDPE)
- SSMU Drake Passage West (APDPW)
- SSMU Elephant Island (APEI)

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[1] STATLANT data also cover krill fishing which takes place occasionally outside the Convention Area (e.g. Division 41.3.2), and toothfish fishing which takes place in the Exclusive Economic Zones (EEZ) at Prince Edward and Marion Islands and Crozet Islands where these EEZs extend into Area 51 outside the Convention Area; however these data are not reported in the *Statistical Bulletin*.

- SSMU Pelagic Area (APPA)

South Orkney Islands (Subarea 48.2, SSMU group SO)
- SSMU North East (SONE)
- SSMU Pelagic Area (SOPA)
- SSMU South East (SOSE)
- SSMU West (SOW)

South Georgia (Subarea 48.3, SSMU group SG)
- SSMU East (SGE)
- SSMU Pelagic Area (SGPA)
- SSMU West (SGW)

South Sandwich Islands (Subarea 48.4, SSMU group SS)
- SSMU Pelagic Area (SSPA)
- SSMU Inshore (SSIS).

Trade statistics are derived from the landings and exports of toothfish reported in CCAMLR's Catch Documentation Scheme (CDS, refer https://www.ccamlr.org/en/compliance/catch-documentation-scheme-cds). The CDS covers catches taken from inside and outside the Convention Area. Landings of toothfish caught inside the Convention Area are summarised by subarea and division. Landings of toothfish caught outside the Convention Area are summarised by statistical area only. Exports and re-exports of toothfish product are summarised by Flag state of the fishing vessel, export state and unlading state. Trade statistics are reported for each species of toothfish (*D. eleginoides* and *D. mawsoni*) by calendar year since 2000. The geographic location of exported and imported product is used to assign export, re-export and import countries or entities. Landings and exports reported by some countries or entities may include data in respect of their overseas territories. Weights are expressed in metric tonnes, and provided for product weight and estimated green weight.

Planimetric seabed areas are derived from GEBCO_2014 bathymetry data (www.gebco.net). Refer to the CCAMLR GIS (gis.ccamlr.org). Seabed areas (km2) are provided for subareas, divisions, fishery management areas and research areas in the Convention Area, and include seabed areas by selected depth intervals (0 – 600 m, 600 – 1800 m, and 1800 m – maximum depth).

Information published in the *Statistical Bulletin* is currently available in three formats:

- MS Access database (see below: *Statistical Bulletin* Volume 31)
- Fishery webpages (catch statistics for toothfish, icefish (*Champsocephalus gunnari*) and krill
- CSV data files (catch and effort statistics, krill catches by SSMU, trade statistics and reference data).

An updated format including data in MS Excel in the form of pivot tables and charts is currently in draft and will be released as an update to *Statistical Bulletin* Volume 31 after review by the CCAMLR Data Services Advisory Group (DSAG). This will aim to make the data more accessible and will allow users to modify the presentation of data to fit their needs.

***Statistical Bulletin* Volume 31 (May 2019)**

CCAMLR *Statistical Bulletin* Volume 31 was published in May 2019 and is available in MS Access database format. The *Bulletin* contains the complete time series of catch and effort statistics and trade statistics, as well as the catch histories of selected species and the seabed areas in the Convention Area. The *Bulletin's* underlying data are available as database tables (aggregated fishery effort, aggregated fishery catch, aggregated toothfish landings, aggregated toothfish exports, reference data, see also 'csv data files' below). Catches of krill by month and SSMU are also available as a database table (aggregated krill catch), and may be visualised on the CCAMLR fishery webpages. The data structure in these tables is the same as that used for the csv data files.

To access the *Statistical Bulletin*, please download the file, unzip and open the MS Access database. A user interface is available from the 'Statistical Bulletin Menu' tab on the welcome page (top, right).

The *Bulletin* menu has tabs for the following sections:
> A: Maps and standard abbreviations
> B: Catch and effort data
> C: Catch history
> D: Landings and trade data
> E: Seabed areas.

Users may generate standard tables or user-defined queries, pivot charts and tables; outputs may be printed or saved in pdf using the 'report' option (report > view report > print). Users may need to lower their macro security settings in order to operate the database (MS Access menu > file > privacy options > trust center > trust center settings > macro settings > enable all macros).

Selected tables are also available from the CCAMLR website (https://www.ccamlr.org/en/document/data/ccamlr-statistical-bulletin-vol-31-selectedtables) in pdf format.

Fishery webpages

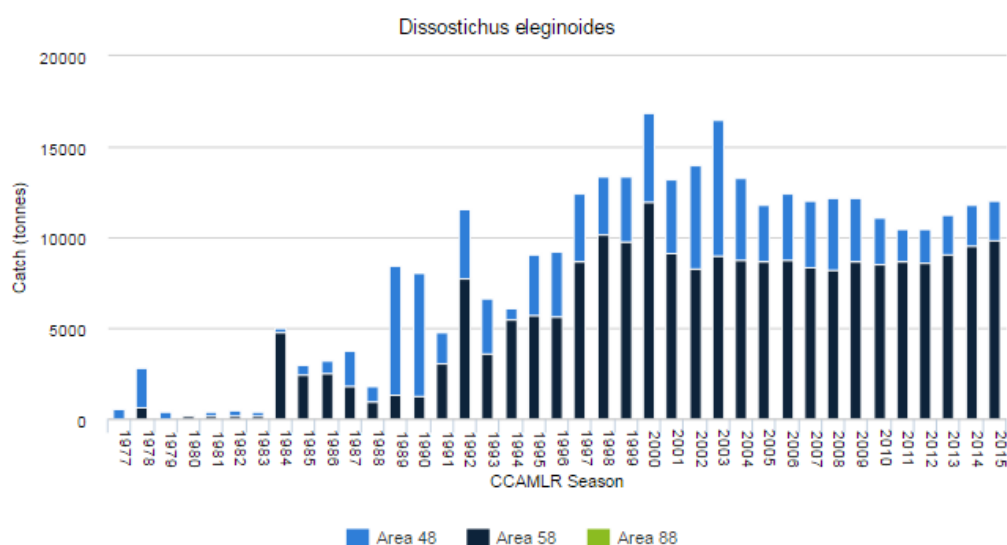The catch data for target species may be visualised and downloaded from the CCAMLR Fisheries pages:

Toothfish – https://www.ccamlr.org/en/fisheries/toothfish-fisheries

Icefish – https://www.ccamlr.org/en/fisheries/icefish-fisheries

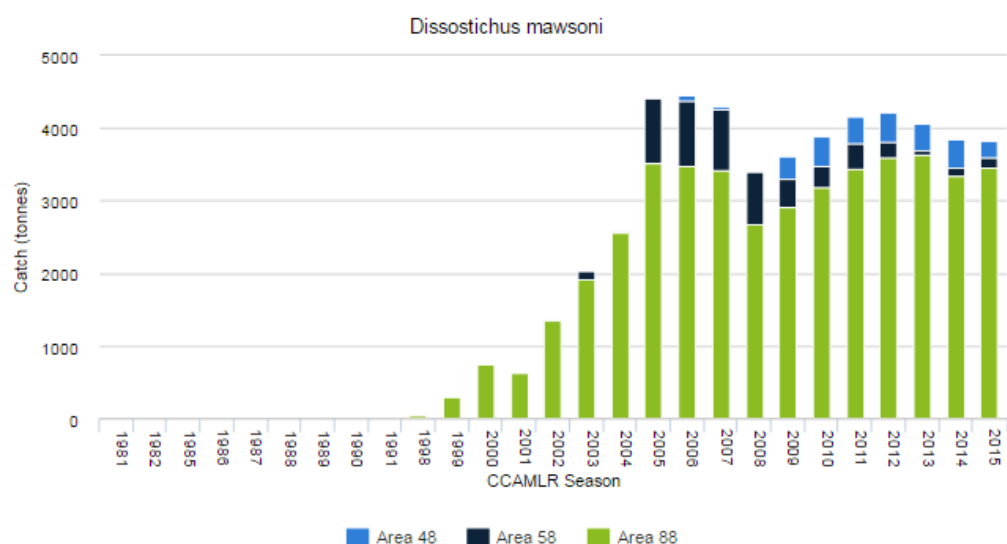Krill – https://www.ccamlr.org/en/fisheries/krill-fisheries

Catches may be displayed for all areas in the Convention Area, or by subarea and division within Areas 48, 58 and 88 (see example below), and selected data may be downloaded in csv format. Krill catches by month and SSMU may also be displayed and downloaded.

Catch history

Dissostichus eleginoides

Dissostichus mawsoni

CSV data files

The *Statistical Bulletin*'s underlying data are contained in five data files which are available in csv format:

Catch and effort statistics

- AggregatedFisheryEffort.csv and AggregatedFisheryCatch.csv – total catch and fishing effort by Flag State, vessel size category, target species, geographic area, fishing gear, fishing activity, calendar year and month. These data are derived from monthly STATLANT data (form 08B) validated by CCAMLR Members. Form 08B is used to report monthly fishery statistics on catch and effort in the Southern Ocean and the data form is based on a standard questionnaire originally designed by the Coordinating Working Party on Fisheries Statistics (http://www.fao.org/fishery/cwp/en) for use in global fishery statistics.

- AggregatedKrillCatch.csv – estimated total catch of krill (*E. superba*) by calendar year, month and small-scale management unit (SSMU; refer gis.ccamlr.org). The catches are derived from monthly STATLANT data (reported at the subarea-level) and the spatial distribution of catches reported in haul-by-haul data (C1). Where historic C1 data were missing, or insufficient to allocate catches to individual SSMUs (i.e. SSMU-group catches reported in the C1 data were < 50% of those reported in the STATLANT data), the catches for that month was allocated to the SSMU groups.

Trade statistics

- AggregatedToothfishLandings.csv – Landings of toothfish (*D. eleginoides* and *D. mawsoni*) by calendar year, statistical area and Flag state. These data are derived from the CCAMLR Catch Documentation Scheme (CDS).
- AggregatedToothfishExports.csv - Exports and re-exports of toothfish (*D. eleginoides* and *D. mawsoni*) by calendar year, Flag state, export state and unlading state. These data are derived from the CDS.

The relationship between these data files is illustrated in the Statistical Bulletin data model (Figure 1) and the data attributes are described in the data dictionary (CCAMLR Statistical Bulletin Data Dictionary.pdf). The data model is based on a star schema with fact tables (aggregated data) and dimensions (year, month and reference data). The reference data (also included in the *Statistical Bulletin*) are:

- ReferenceDataCountry.csv - A country or an entity or an association of countries
- ReferenceDataFishingActivity.csv - Type of fishing activity conducted by a vessel (e.g. commercial fishing, fishery survey).
- ReferenceDataFishingGear.csv – An equipment used in fishing activities (e.g. midwater otter trawl).
- ReferenceDataGeographicArea.csv - A defined geographical area such as a FAO statistical area or other types of areas specific to CCAMLR (e.g. SSMU).
- ReferenceDataTaxon.csv - A unit of taxonomy used to define the hierarchy of a biological classification system. The CCAMLR taxonomy is based on the FAO ASFIS species list.
- ReferenceDataVesselSize.csv - Size category of fishing vessels based on gross tonnage, as defined in the STATLANT data form 08B. Categories relevant to CCAMLR fishing vessels are category 7: 250 to <500t; 8: 500 to <1000t; 9: 1000 to <2000t; 10: 2000 to <4000t; 11: 4000 to <10000t; 12: 10000 to < 100000t.

The csv data files are bundled in a zip file.

Security classification

The data published in the Statistical Bulletin and the aggregated and reference data available in csv format are in the public domain. Users are requested to acknowledge the source of these data as follows:

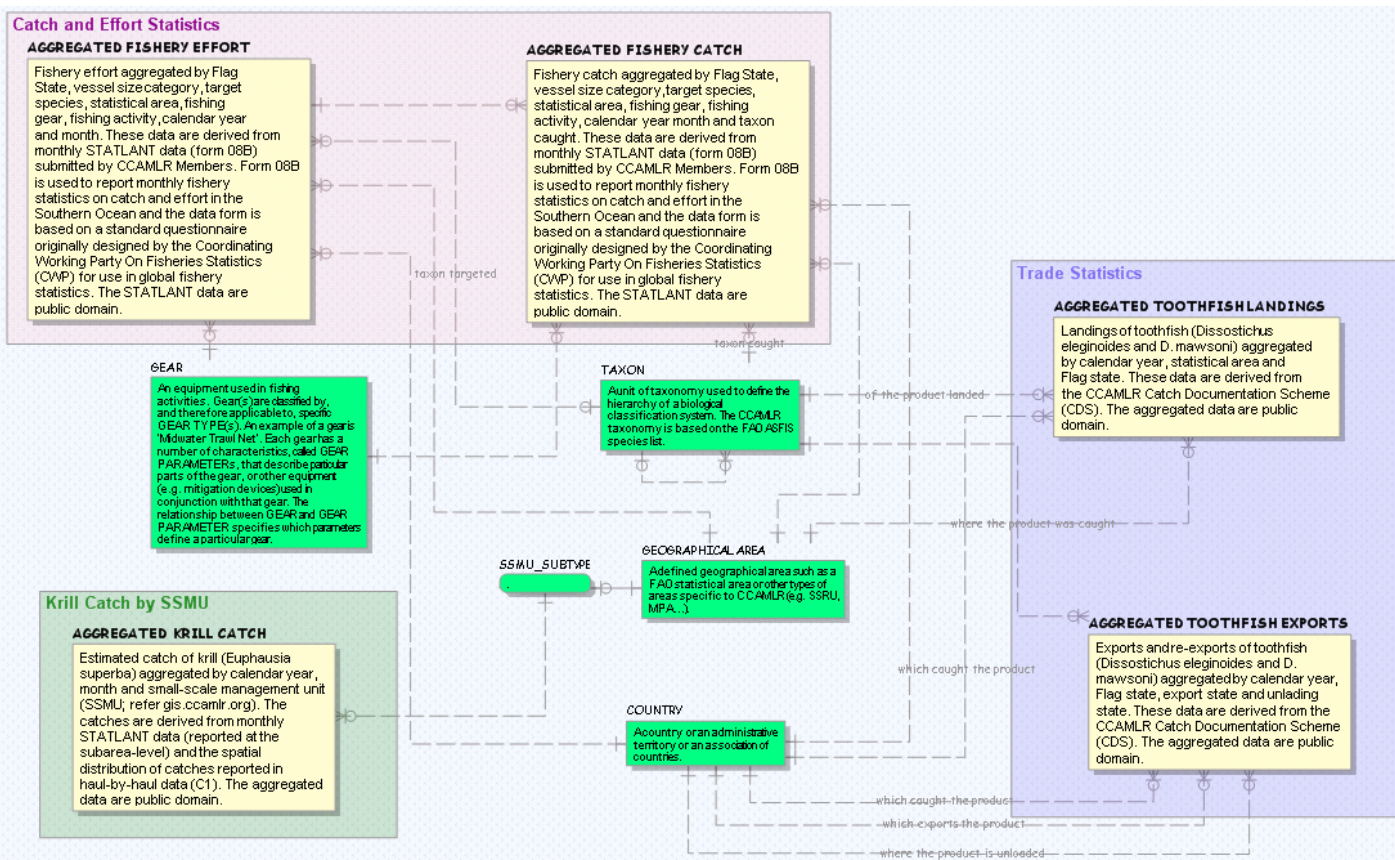CCAMLR. 2019. Statistical Bulletin, Vol. 31. www.ccamlr.org

Figure 1: Data model for the *Statistical Bulletin*'s aggregated data on catch and effort statistics, krill catch by SSMU and trade statistics (fact tables). The reference data (dimensions) are in green.