منظمة الأغذية والزراعة للأمم المتحدة | 联合国粮食及农业组织 | Food and Agriculture Organization of the United Nations | Organisation des Nations Unies pour l'alimentation et l'agriculture | Organización de las Naciones Unidas para la Agricultura y la Alimentación

COORDINATING WORKING PARTY ON FISHERY STATISTICS

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Review fo Fishery Statistics

Author: CCAMLR

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CCAMLR - AGENCY REPORT TO CWP-23

Prepared by the CCAMLR Secretariat

Main purpose and usage of statistics

Fishery statistics are used primarily to monitor, assess and manage fisheries in the area applicable to the Convention on the Conservation of Antarctic Marine Living Resources (herein referred to as the Convention Area; i.e. Southern Ocean, Statistical Areas 48, 58 and 88). Summary statistics are published annually in the CCAMLR *Statistical Bulletin* (available in hardcopy and database format, see http://www.ccamlr.org/pu/e/e_pubs/sb/intro.htm). This summary includes landing and trade statistics derived from CCAMLR's Catch Documentation Scheme for toothfish (*Dissostichus* spp.).

Catch and effort data structure, geographical and temporal resolution and length of time series

Catch and effort data reported to CCAMLR include: date, position, depth, fishing duration, gear characteristics and catch by species, including by-catch and incidental catches. These data are submitted on a haul-by-haul basis. Some historical data are aggregated by fine-scale rectangle (e.g. by 0.5 x 1.0 degree rectangle) and 10-day period.

Catch and effort data held by CCAMLR include:

- Fishery catch and effort reports (real-time reports submitted every day, 5-day, 10-day or month, depending on the fishery);
- Haul-by-haul catch and effort data, including by-catch and incidental catches;
- Haul-by-haul scientific observer data (catch including by-catch and incidental catches, mitigation methods, effort, biological data, species composition, tagging data, VME data);
- VME notifications and haul-by-haul data (see below); and
- STATLANT data (form 08B aggregated by statistical region and month).

Some data series extend to prior to the ratification of CCAMLR's Convention in 1982.

Electronic data forms

Contracting Parties usually submit data to CCAMLR using electronic data forms (eForms). Most eForms are in MS Excel format and include pop-up notes and pull down menus. Some eForms have macros for converting data into a compact text format (for emailing) and some eForms are in MS Access format. The eForms are available from the CCAMLR website, for example:

- fishery and research data http://www.ccamlr.org/pu/e/sc/dat/intro.htm
- scientific observer data http://www.ccamlr.org/pu/e/sc/obs/intro.htm
- ecosystem monitoring data http://www.ccamlr.org/pu/e/sc/cemp/intro.htm
- catch documentation data http://www.ccamlr.org/pu/e/cds/intro.htm.

Encounters with Vulnerable Marine Ecosystems (VMEs)

CCAMLR Contracting Parties are required to notify the Secretariat of encounters with VMEs. Notifications are made either under Conservation Measure 22-07 (attached) in the case of encounters with potential VMEs made during the course of bottom fishing, or Conservation Measure CM 22-06 in other cases. Notifications are required for encounters in the Convention Area south of 60°S, Division 58.4.1 north of 60°S, and the rest of the Convention Area with the exception of subareas and divisions where an established fishery (with a non-zero catch limit) was in place in 2006/07 (paragraphs 1 and 2, CM 22-06).

Vessels operating in exploratory bottom fisheries (longline and pot) are required to monitor all line segments for the quantity of VME-indicator organisms recovered during hauling. VME-indicator organisms are defined in the CCAMLR VME Taxa Classification Guide (attached). If ≥ 5 VME-indicator units are recovered within one line segment, then the vessel (or Flag State) is required to immediately submit a VME-indicator notification to the Secretariat. Vessels are also requested to record, to the extent possible, the mid-point of each line segment and the quantity of VME-indicator units recovered, and submit these data with the fine-scale catch and effort data.

On receipt of VME-indicator notifications where ≥ 10 VME-indicator units are recovered within one line segment, the Secretariat declares a 'VME Risk Area' within a 1 nautical mile radius of the mid-point of the relevant line segment. Risk areas are closed to fishing, and remain closed until reviewed by the Scientific Committee and management actions are determined by the Commission (paragraph 9, CM 22-07).

On receipt of five VME-indicator notifications from within a single fine-scale rectangle (0.5 degree latitude x 1.0 degree longitude, typically 30 x 30 nautical miles in the Convention Area), the Secretariat notifies Flag States and their vessels of the location of each 'VME Fine-Scale Rectangle'. Fishing is permitted to continue in VME fine-scale rectangles in accordance with conservation measures in force.

Contracting Parties are also required to notify VMEs encountered during the course of research and related activities (CM 22-06, Annex B).

Scientific observers are tasked with recording the taxonomic composition and abundance of VME-indicator organisms

Are catch data available by EEZ?

Yes. Catches reported in catch and effort datasets provide information on fishing both inside and outside of EEZs. Catch information by EEZ is also reported via the Catch Documentation Scheme. Although not explicitly defined within the STATLANT data form, STATLANT data may also provide this level of spatial resolution.

Data source

Data submitted to CCAMLR are reported by Member Countries and other Contracting Parties, and include data collected on board fishing vessels and research vessels, by scientific observers, and through established programs such as CCAMLR's Catch Documentation Scheme and CCAMLR's Ecosystem Monitoring Program.

Availability of retained fish by-catch (non-target) species data

Data on by-catch species (including catch and biological data) are submitted by Flag States and scientific observers. These data are held by CCAMLR and are assessed by its Scientific Committee and Working Groups.

Availability of discard data (including birds and mammals)

Data on by-catch rates and composition, including incidental catches of seabirds and marine mammals, are submitted by Flag States and scientific observers. These data are held by CCAMLR and are assessed by its Scientific Committee and Working Groups.

CCAMLR encourages CWP Members to further consider ways to improve and standardise the reporting of by-catch species and incidental catches. Specifically, CCAMLR seeks standard information on incidental catches of seabirds and other species taken from fishing on grounds within the geographic range of species found in the Convention Area.

CCAMLR has adopted Resolution 22/XXV seeking further collaboration with RFMOs to reduce the incidental mortality of seabirds arising from fishing (attached). CCAMLR urges RFMOs listed below to implement or develop, as appropriate, mechanisms to collect, report and disseminate data on incidental mortality of seabirds, particularly:

- Rates of incidental mortality of seabirds associated with each fishery, details of the seabird species involved, and estimates of total seabird mortality (at least at the scale of FAO statistical areas);
- Measures to reduce or eliminate incidental mortality of seabirds that are in use in each fishery and the extent to which any of these measures are voluntary or mandatory, together with an assessment of their effectiveness; and
- Scientific observer programs that provide comprehensive spatial and temporal coverage of fisheries to allow statistically robust estimation of incidental mortality associated with each fishery.

For areas where such mechanisms are currently unavailable or where systematic data reporting has not commenced, Flag States fishing outside the Convention Area, which incidentally take seabirds of species breeding in the Convention Area (i.e. the Southern Ocean), are requested to provide the CCAMLR Secretariat with summary data.

The RFMOs identified for contact with respect to collaboration on the mitigation of by-catch of southern ocean seabirds are:

- Inter-American Tropical Tuna Commission (IATTC)
- International Commission for the Conservation of Atlantic Tunas (ICCAT)
- South East Atlantic Fisheries Organisation (SEAFO)
- Indian Ocean Tuna Commission (IOTC)
- Commission for the Conservation of Southern Bluefin Tuna (CCSBT)
- Agreement on the Organization of the Permanent Commission on the Exploitation and
- Conservation of the Marine Resources of the South Pacific, 1952 (CPPS)
- Southwest Indian Ocean Fisheries Commission (SWIOFC)
- Commission for Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific (WCPFC)
- Western Indian Ocean Tuna Organization Convention (WIOTO)
- Southern Indian Ocean Fisheries Agreement (SIOFA)

CCAMLR urges CWP Members involved in the above RFMOs to implement the recommendations of Resolution 22.

Availability of biological data (including size composition)

Biological data are collected by international and national scientific observers on board all fishing vessels targeting finfish in the Convention Area (100% coverage). Observers are also deployed on board some vessels targeting krill, and fishing crews may also report biological data. Biological data reported to CCAMLR include:

- Species composition;
- Tagging data;
- Length and weight;
- Sex, maturity stage and gonad weight;
- Age (from otolith and/or scale);
- Mark-recapture data for toothfish and some by-catch species;
- Feeding intensity (krill); and
- Presence of parasites.

Availability of economic data

Economic data are submitted to CCAMLR on request. In recent years the Scientific Committee has requested that Member Countries submit economic and other data which may be used to determine technological and economic trends in the krill fisheries. In addition, the Secretariat maintains a 'patents' database to monitor trends in patent activities associated with krill fisheries and by-products.

Availability of environmental data

Environmental data are collected as part of CCAMLR Ecosystem Monitoring Program (CEMP) and through surveys of marine debris. Environmental data are also collected during research surveys. Environmental data held by CCAMLR include:

- Extent of sea-ice cover;
- Sea surface temperatures;
- Conductivity-Temperature-Depth profiles; and
- Composition of marine debris from at-sea observations and beach surveys.

Catch data verification methods (e.g. trade data)

CCAMLR's Catch Documentation Scheme (CDS) aims to:

- Identify the origins of toothfish (*Dissostichus eleginoides* and/or *Dissostichus mawsoni*) imported into or exported from the territories of Contracting Parties;
- Monitor the international trade in toothfish;
- Determine whether toothfish imported into or exported from the territories of Contracting Parties, if caught in the Convention Area, was caught in a manner consistent with CCAMLR conservation measures; and
- Gather additional catch data for the evaluation of total removals.

To meet this objective, all landings, transhipments and importations of toothfish into the territories of Contracting Parties and participating non-Contracting Parties must be accompanied by completed Catch or Export Documents specifying a range of information including the name and Flag State of the vessel and the volume and location of the catch and subsequent trade.

The CDS is open to all States involved in the harvest or trade of toothfish and non-Contracting Parties to CCAMLR are encouraged to participate in this Scheme.

An important element of the Scheme is a central database where participating countries can access and enter catch, export and re-export documentation and related information through a secure Internet connection.

Standard summaries of CDS data are published annually in CCAMLR's *Statistical Bulletin*. These summaries include landed weights of *Dissostichus* spp. by year, Flag State of harvesting vessel, area/subarea/division caught (including whether inside an EEZ) and exported and re-exported weights of *Dissostichus* spp. by year, Export State and Import State.

Usage of fishery-independent data

Fishery-independent data are used to assess stocks of finfish and krill in the Convention Area. The data held by CCAMLR are analysed by the Scientific Committee and Working Groups, and the fishery-independent data include:

- fishery survey data (e.g. trawl and acoustic surveys);
- composition and distribution of marine debris; and
- long-term biological and environmental data collected under CEMP.

Reporting policy in relation to nationality of catch

CCAMLR has agreed that, whilst acknowledging that joint ventures may occur, joint ventures should not allow non-CCAMLR flagged vessels to fish inside the Convention Area. Any sort of devolution of the responsibilities of Flag States should be avoided and only vessels under the jurisdiction of CCAMLR Flag States should be issued with licences to fish in the Convention Area (Conservation Measure 10-02). This requirement clarifies the responsibilities attached to CCAMLR Members in respect of any joint ventures to fish in the Convention Area.

Are countries obliged to report data?

Yes. Requirements for reporting fisheries data are outlined in the Conservation Measures which are updated annually and adopted by the Commission by consensus. These measures are published in the Schedule of Conservation Measures in Force (http://www.ccamlr.org/pu/e/e_pubs/cm/drt.htm), and are incorporated in Members' national legislation.

Do all member countries report data?

Yes. All Member countries involved in research and/or fishing activities in the Convention Area report data to CCAMLR.

What is included in catch statistics?

Catches of all species taken in the Convention Area are reported, including species caught as by-catch and incidentally, species caught in new and exploratory fisheries, and species taken during the course of research (e.g. trawl survey). Traditional and recreational fishing activities, and aquaculture, do not take place in the Convention Area.

Observer program

CCAMLR's Scheme of International Scientific Observation was adopted in 1992 under Article XXIV of the Convention. This Scheme is designed to gather and validate scientific information essential for assessing the status of populations of Antarctic marine living resources, and the impact of fishing on populations of harvested, related and dependent species. The conditions of the Scheme are equally applicable to fishing vessels and research vessels. Conservation measures require that at least one international scientific observer, and in some cases two observers, appointed under the Scheme are deployed on each fishing vessel operating in new or exploratory fisheries, and established fisheries targeting finfish, crab or squid. Scientific observers are also deployed in krill fisheries. Observers appointed under the CCAMLR Scheme are not citizens of the Flag State of the vessels on which they serve.

Vessel monitoring system

CCAMLR maintains a centralised vessel monitoring system (VMS) which is based in the CCAMLR Secretariat (Conservation Measure 10-04). Contracting Parties are required to ensure that the positions of their vessels operating in fisheries targeting finfish, crab or squid in the Convention Area are reported to the CCAMLR Secretariat on a four-hourly basis. Position reports are forwarded to the CCAMLR Secretariat in real-time for those vessels participating in new and exploratory fisheries, and may be forwarded on departure from the Convention Area for other fisheries.

Restrictions on access to data

Access and use of data held by the CCAMLR Secretariat falls under five general categories:

1. With the exception of STATLANT data (catch and effort statistics, see 2 below), data from the Catch Documentation Scheme (CDS, see 3 below) and data from automated Vessel Monitoring Systems (VMS, see 4 below), all CCAMLR data are subject to the Rules for Access and Use of CCAMLR Data (*Basic Document, Part 11,* see http://www.ccamlr.org/pu/e/e_pubs/bd/pt11.pdf). Under the terms of these rules, data are freely available to Members for analysis and preparation of documents for the Commission, Scientific Committee and their subsidiary bodies.

2. STATLANT data are held in the public domain and are freely available (see http://www.ccamlr.org/pu/e/e_pubs/sb/intro.htm). These data are transmitted to FAO and Regional Bodies (e.g. Eurostat), and summary statistics are published annually in the

CCAMLR Statistical Bulletin and other publications such as the *FAO Yearbook of Fishery Statistics.*

3. CDS data are subject to the Rules for Access to CDS Data (*Basic Document, Part 12*, see http://www.ccamlr.org/pu/e/e_pubs/bd/pt12.pdf).

4. The release of VMS data is subject to the Provisions on Secure and Confidential Treatment of Electronic Reports and Messages Transmitted Pursuant to Conservation Measure 10-04 (*Conservation Measure 10-04. Annex B,* see http://www.ccamlr.org/pu/e/e_pubs/cm/09-10/10-04.pdf).

5. Copies of data held by other organisations (i.e. non-CCAMLR datasets) are subject to terms specified by each parent organisation. Generally, these terms allow free access and use of the data.

ATTACHMENT

CONSERVATION MEASURE 22-07 (2009)[1,2]
Interim measure for bottom fishing activities subject to Conservation Measure 22-06 encountering potential vulnerable marine ecosystems in the Convention Area

The Commission,

Noting the commitment made by Members to avoid significant adverse impacts on vulnerable marine ecosystems (VMEs) from bottom fishing activities,

Acknowledging the current prohibitions on bottom trawling in Conservation Measure 22-05 and on deep-sea gillnetting in Conservation Measure 22-04 in the high-seas areas of the Convention Area,

Agreeing on the need to implement the precautionary approach for managing bottom fisheries with respect to VMEs due to the difficulty in acquiring data on their location, extent and risk of significant adverse impacts,

Further noting the need to acquire additional data during the 2009/10 season to contribute to assessments and advice on a long-term precautionary approach to avoiding significant adverse impacts on VMEs,

hereby adopts the following conservation measure in accordance with Article IX of the Convention and Conservation Measure 22-06:

Area

1. This conservation measure applies to the same area as Conservation Measure 22-06.

Definitions

2. The following definitions apply to this conservation measure:

   (i) Those contained in paragraphs 3 and 4 in Conservation Measure 22-06 relating to 'vulnerable marine ecosystems' (VMEs) and 'bottom fishing activities'.

   (ii) 'VME indicator organism' means any benthic organism listed in the CCAMLR VME Taxa Classification Guide[3].

   (iii) 'VME indicator unit' means either one litre of those VME indicator organisms that can be placed in a 10-litre container, or one kilogram of those VME indicator organisms that do not fit into a 10-litre container.

   (iv) 'Line segment' means a 1 000-hook section of line or a 1 200 m section of line, whichever is the shorter, and for pot lines a 1 200 m section.

   (v) 'Risk Area' means an area where 10 or more VME indicator units are recovered within a single line segment. A Risk Area has a radius of 1 n mile from the midpoint[4] of the line segment from which the VME indicator units are recovered. However, Members may require their vessels to observe a larger Risk Area in accordance with their domestic laws.

Vessel requirements

3. Members shall require their vessels to clearly mark fishing lines into line segments and collect segment-specific data on the number of VME indicator units.

4. Members shall require their vessels, if 10 or more VME indicator units are recovered in one line segment, to complete hauling any lines intersecting with the Risk Area without delay and not to set any further lines intersecting with the Risk Area. The vessel shall immediately communicate to the Secretariat and to its Flag State the location of the midpoint of the line segment from which those VME indicator units were recovered along with the number of VME indicator units recovered.

5. Members shall require their vessels, if five or more VME indicator units are recovered within one line segment, to immediately communicate to the Secretariat[5] and to their Flag State the location of the midpoint of the line segment from which those VME indicator units were recovered along with the number of VME indicator units recovered.

Management

6. On receipt of a notification under paragraph 4, the Secretariat shall:

   (i) record the location of the Risk Area;

   (ii) within one working day of receipt, notify all fishing vessels in the relevant fishery and their Flag States that the Risk Area is closed; and that, as in paragraph 4, all vessels shall immediately cease setting any further lines intersecting with the Risk Area.

7. On receipt of five notifications under paragraph 5 within a single fine-scale rectangle[6], the Secretariat shall, within one working day of receiving the fifth notification, notify all fishing vessels in the relevant fishery and their Flag States of the coordinates of the fine-scale rectangle, indicating that VMEs may occur within that area. Vessels may continue to fish in the area consistent with paragraphs 4 and 5.

Data

8. Vessels shall report in accordance with Conservation Measure 23-01 total benthos recovered in a five-day period. To the extent possible, VME indicator units for each line segment and the midpoint of each line segment on all lines, including zero catches, should be reported in the fine-scale data.

Review

9. A Risk Area shall remain closed for any fishery until reviewed by the Scientific Committee and management actions are determined by the Commission. Scientific research shall be allowed in Risk Areas as agreed by the Scientific Committee.

10. The Commission will review this conservation measure in 2010, in light of observer, vessel and other data collected during the 2009/10 season, the results of the

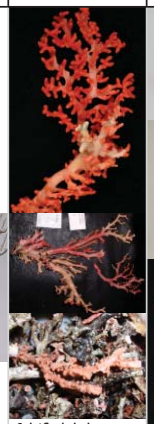
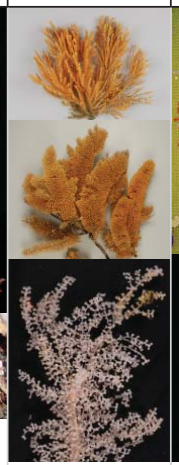
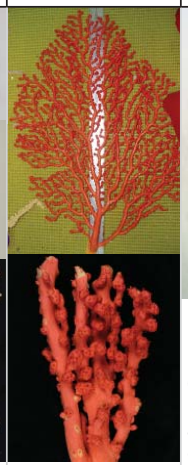
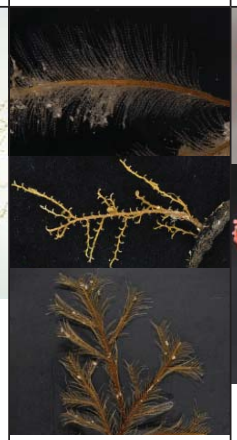
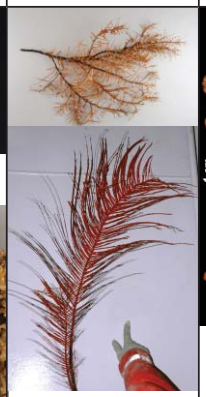
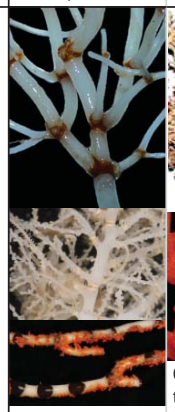
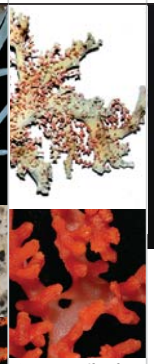
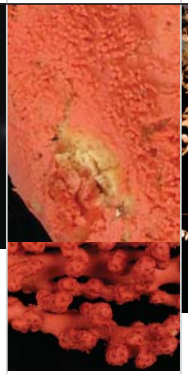
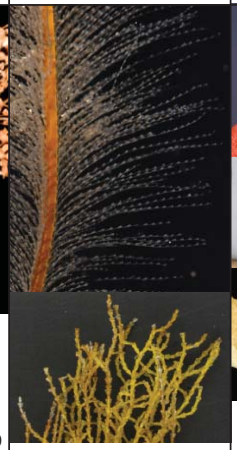
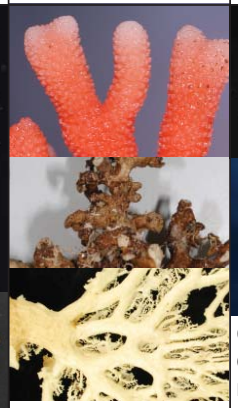
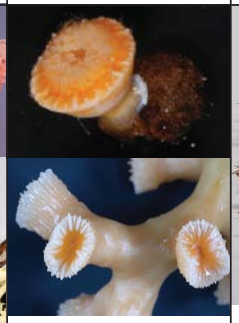
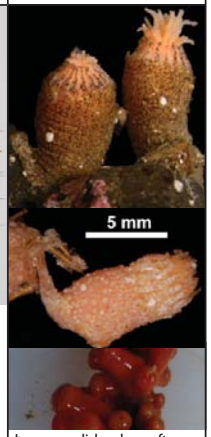
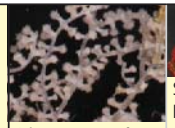
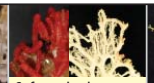
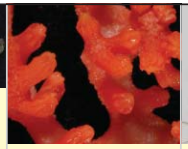
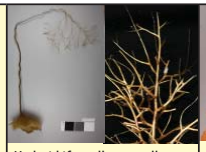
deliberations of the Working Group on Ecosystem Monitoring and Management (WG-EMM) and the Working Group on Fish Stock Assessment (WG-FSA), and in accordance with the advice of the Scientific Committee.

[1] Except for waters adjacent to the Kerguelen and Crozet Islands
[2] Except for waters adjacent to the Prince Edward Islands
[3] Available from the CCAMLR Secretariat and on the CCAMLR website.
[4] In latitude and longitude
[5] This may be through the Flag State or directly to the Secretariat, whichever is the most practicable.
[6] A fine-scale rectangle is defined as an area of 0.5° latitude by 1° longitude with respect to the northwest corner of the statistical subarea or division. The identification of each rectangle is by the latitude of its northernmost boundary and the longitude of the boundary closest to 0°.

Note that FAO codes = CCAMLR codes

CCAMLR VME Taxa Classification Guide 2009

These groups are **not** included: Snails, Starfish, Crabs

Phylum	Cnidaria (CNI)										
Code	GGW					AZN	AXT	CSS		AQZ	ZOT
Level	Gorgonacea (Order)					Anthoathecatae (Order)	Stylasteridae (Family)	Scleractinia (Order)		Antipatharia (Order)	Zoantharia (Order)
Taxon	Isididae (Bamboo)	Coralliidae (Red / precious)	Primnoidae (Bottle brush, sea fans)	Paragorgiidae (Bubblegum)	Chrysogorgiidae (Golden)	Hydroidolina (sub class) Hydroids	Stylasterids (Hydrocorals)	Stony corals		Black corals	Zoanthids
Form, size											
	Solid calcified trunk with brown joints (nodes), rings in x-section, branching 2D or 3D, fine tips, tree like branch tips	Calcified skeleton, no spines. Thick, stubby stems with fine side branches	Dark or metallic tree-like branches, flexible	Large (up to 2 m), red, thick stems, breaks when flexed	Gold, black or green metallic lustre. Semi-rigid, single, main axis with semi-soft tissue cortex. Small specimens can be feathery like hydroids or bushy like black coral	Entire organism small, <30 cm, flexible and plant-like, often feathery, no soft tissue covering	Calcified, no rings in X-section, often pink or white. Often uniplanar, side branches lattice from obviously thicker main stems	**Cups:** usually small (<20cm), solitary or in small clusters Branching matrix-forming stony corals have not been observed south of 56°S		Semi-rigid, woody, not very dense, dark brown or black skeleton, can be large (>2 m). Branch tips can look like hydroids or small gorgonian	Erect "coral-like" colonies. Often grow on, or colonise, other living corals.
Detail (texture, colour, polyps)											
	Can scrape off surface tissue, skeleton surface smooth between nodes	Can scrape off surface tissue. Smooth (not sandpapery) with knobbly ends. No pores on skeleton	Usually no spines, some metallic lustre on skeleton, 3D bushy branches, obvious polyps	Chalky material, not hard. No spines, can scrape off surface. Bulbous ends with polyps	Can be non-branching and whip-like. Usually no spines, metallic lustre. Fine or sparse 3D branching	Indistinct polyps, feathery tips	Coarse sandpaper texture, can't scrape off surface tissue. Has minute pores. Can be white or red	Calcified, very hard or brittle **Cups:** Can be ridged **Branching:** Often smooth stems. Can form a 3D matrix. Polyp calyces well formed with ridged edges, large, hard polyps		Slimy flesh on branches. Surface with minute spines, may appear smooth. 3D, fine or bushy tips	Large roundish polyps; often bright orange.
Commonly mistaken for other groups, such as:											
	Other gorgonians if in small pieces, but won't break easily	Soft corals, that have soft stems. Stylasterids, but Coralliidae have nodules	Hydroids if small pieces, but have distinct polyps	Pieces of Corallium	Antipatharia, but tips are not slimy	Small specimens of Gorgonacea, Antipatharia, or carnivorous sponges	Small, hard bryozoans or pieces of Coralliidae	Pieces of hydrocorals and *Corallium* can be confused with branching stony corals		Hydroid if small, or small pieces of dead Gorgonacea	Large brooding gorgonian coral polyps; branching soft corals

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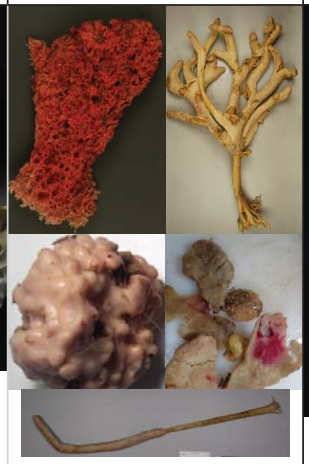
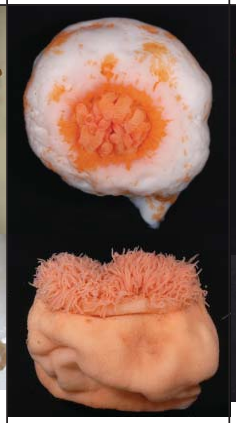
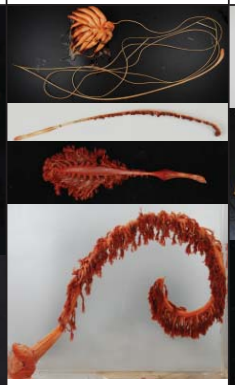
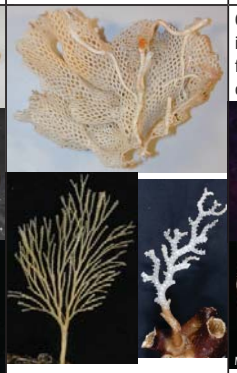
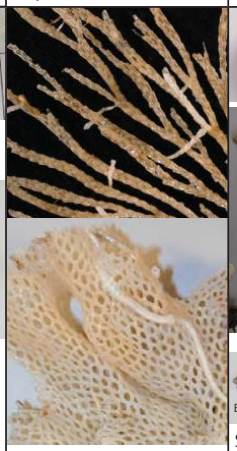
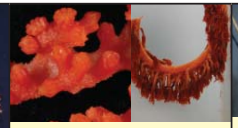
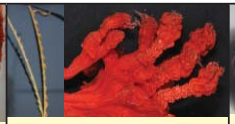
Note that FAO codes = CCAMLR codes

CCAMLR VME Taxa Classification Guide 2009

These groups are **not** included: Snails, Starfish, Crabs

Phylum	Porifera (PFR)		Cnidaria (CNI)			Chordata (CZR)	Bryozoan	Chemosynthetic
Code	HXY	DMO	ATX	AJZ	NTW	SSX	BZN	CXV
Level	Hexactinellida (Class)	Demospongiae (Class)	Actiniaria (Order)	Alcyonacea (Order)	Pennatulacea (Order)	Ascidiacea (Class)	Bryozoans (Phylum)	Various groups
Taxon	Glass sponges	Siliceous sponges	Anemones	Soft corals	Sea pens	Sea squirts	Lace corals	Chemosynthetic communities
Form, size	 Diverse shapes: hollow central chamber spiky & vase-like, egg-shaped with hairy mass at base, honeycombed tubular crystalline forms	 Much variety: fans, spheres, solid masses, tubes, and encrusting	 Rubbery bottom with single polyp with lots of tentacles. Usually in retracted hardened cylinder form when captured	 Can be mushroom shaped. Floppy or soft, leather-like surface texture. Usually multiple large polyps, body not symmetrical, no foot or stalk	 Feather-shaped with fleshy polyps. Non-branching to whip-like cartilaginous stalk. Fleshy foot or anchor present, body symmetrical. Can be tall, >1 m	 No tentacles or polyps. Stalked solitary or colonial. No skeleton, stalk-like or encrusting over substrate	 Typically small, (<30 cm). Variable forms. Can be hard or soft (most commonly hard) branching, lace-like, or cornflake shaped, calcified, and brittle, surface cannot be scraped off	Chemosynthetic habitat sites, including cold seeps, vents, whale falls and sunken wood include some of the following associated biota: 
Detail (texture, colour, polyps)	 Surface frequently spiny, always very siliceous or like fibre-glass, ice-like, delicate, crunchy	 Varied textures: fleshy, rubbery, fibrous, woody, flexible, elastic, stony, hairy	 Tentacles sometimes look like worms when detached	 Similar polyps to seapens, but soft corals are not stalked	 Fleshy polyps. Flower or feather like polyp mass	 Regularly spaced surface pores. Zooids visible in transluscent bodies. Gelatinous, soft and fleshy, leathery, flexible	 No polyps	 Sediment or organisms may smell of rotten eggs - sulphurous
Commonly mistaken for other indicator groups, such as:	 Bryozoans or scleractinians that are small and of a hard matrix	 Some Alcyonaceans, Ascidians, which are not spongy but fleshy and have polyps or siphons, and Bryozoans.	 Alcyonaceans, which usually have several polyps	 Small pieces of Corallidae or some sea pens	 Alcyonaceans or some gorgonians due to large polyps and size	 Spherical demosponges or piece of sea pen	 Stylasterids if hard, hydroids if soft, carnivorous demosponge	Species belonging to the same taxa – to date only the white squat lobsters have been recorded in the Antarctic region. Because these communities are little known, **retain samples to be identified by experts**

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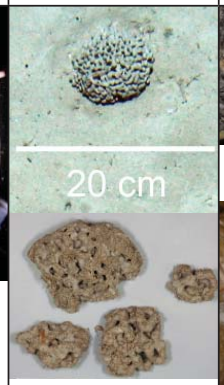
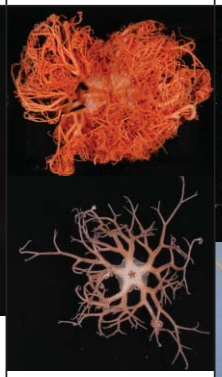
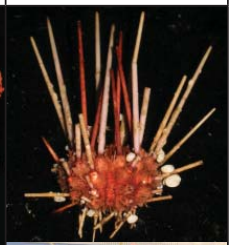
CCAMLR VME Taxa Classification Guide 2009

These groups are **not** included: Snails, Starfish, Crabs

Phylum	Brachiopoda	Hemichordata (HET)	Annelida (NHE)	Xenophyophora	Arthropoda (AXX)	Mollusca (MOL)	Echinodermata (ECH)		
Code	BRQ	PBQ	SZS	XEF	BWY	DMK	CWD	OOY	CVD
Level	Brachiopoda (Phylum)	Pterobranchia (Class)	Serpulidae (Family)	Xenophyophora (Phylum)	Bathylasmatidae (Family)	*Adamussium colbecki* (Species)	Stalked crinoid (Orders)	Ophiurida (Order)	Cidaroida (Order)
Taxon	Lamp shells	Acorn worms	Serpulid tube worms	Xenophyophores	Goose and acorn barnacles	Antarctic scallop	Stalked crinoids (Sea lilies)	Basket and snake stars	Pencil spine urchins
Form, size	 Valves enclose the body dorsally and ventrally rather than laterally. Ventral valve typically larger than the dorsal. Attached species have a short stalk emerging from the hinge area of the valves	 Tubes conjoined into colonies. Usually gelatinous, often semi-transparent	 Tube dwelling marine worms. Each tube flange is about 3.5 mm diameter. Forms large clumps, somewhat coral-like, typically Subantarctic distribution	 A specialised group, is among the largest single-celled protozoans. Colony size can be 10-20 cm in diameter	 These are stalked (goose barnacles)  and non-stalked (acorn barnacles)	 Scallop shaped bivalve. Laterally compressed with two shells, hinged dorsally, that completely enclose the body in most species	 Stalked. Small tulip-like body. Arms usually branched. Crinoids are generally fragile, often only fragments. A long stalk, some bearing whorls of hooklike cirri. Body length up to 20 cm	 Large disc with 5-6 arms splitting at the disc into many coiled branches	  Regularly spherical, rigid structure, typically 2–10 cm in diameter. Covered with small spines and 10 distinct columns of large pencil-like spines
Detail (texture, colour, polyps)	 Delicate shell; clam like. Each valve is bilaterally symmetrical and may be ornamented with concentric growth lines and a fluted or spiny surface	 Red-orange to brown. Tubes closely or loosely bound	 Serpulid worms in hard calcareous tubes	Varied appearance ranging from spherical to flat. Many species have a rounded, lumpy form and irregular netlike surface structure. Most are fragile but one group is felt-like & robust. Found >500 m	 The mantle surface of any barnacle bears at least 5 major plates, which are pulled together for protection. Heavily armoured	 Ribbed scallop-like shell	 Fragile, not flexible. Brittle and segmented	 Distinguished from other sea stars by branched or highly coiled arms and lack of ventral groove on underside of arms	 Usually shades of beige, burgundy or purple. Spines paler, they can be a substrate for other organisms. Large spines can be cylindrical or flattened
Commonly mistaken for other indicator groups, such as:	Resemble bivalve molluscs but one valve is much larger, and overhangs the smaller valve	 Algae, marine tube worms, tunicates or demosponges	 Other worm like forms in sediment tubes	 Fragments of demosponges sponges (see image), colonial ascidians, bryozoans, or 'inorganic concretions'	 Cup corals or clusters of tube worm casings	 Other bivalves or lamp shells	 Arm fragments can look like other animals such as basketstars, or feather stars if stalk not present	 Other sea stars with multiple or coiled arms and more common forms with non-branching arms	 Urchins that lack the large pencil-like spines

CCAMLR VME Taxa Identification Guide Version 2009. Commission for the Conservation of Antarctic Marine Living Resources, Hobart, Tasmania, Australia, 4p. Available at http://www.ccamlr.org/pu/e/e_pubs/VME_guide.pdf

CCAMLR VME Taxa Classification Guide

Conservation Measure 22-07 requires vessels to monitor bycatch for the presence of vulnerable marine ecosystem (VME) taxa as defined by the Commission.
The level of classification required is relatively coarse for most taxa, where phylum, class or order is sufficient. However, some groups may require classification to family or even species. In addition, several groups can be confused at first sight. Therefore, a classification guide is needed to assist in the rapid and efficient classification of VME taxa.

Instructions

This CCAMLR VME Taxa Classification Guide provides observers, fishers, and biologists at sea with a taxon-specific, quick, on-deck guide to aid in the classification of macroscopic marine invertebrate bycatch into the required VME groupings. VME taxa are a subset of the total invertebrate taxa encountered as fishery bycatch, and therefore additional processes are still required to collect information on non-VME taxonomic groups. Typically, invertebrate identification is not done at sea because it requires specialised tools. The format of the VME guide is a "compare and contrast table", using photographs and key characteristics to correctly assign VME taxa to the appropriate grouping. It also highlights commonly confused groups. Symbols representing non-VME groups are listed in the top right-hand margin.

The guide is organised into columns, each describing a taxonomic group and colour coded by phylum. Those groups that appear similar have been placed next to each other where possible. The top row for each column is a parent column that identifies the phylum for the vulnerable groups below. The FAO 3-letter taxonomic code for each group is provided at the top of each column and for the parent group. Below the codes are the scientific and common names for each group. The first row contains photographs and brief descriptions of the overall size and shape of specimens for each group. The next row then provides details of the specimen's appearance, such as texture, colour, or polyp characteristics, and also includes close-up images as examples. A final row (with a yellow background) has images and descriptions of specimens representing other phyla. This row shows how these specimens can be commonly mistaken for other taxa and flags details on what to look out for during classification. Text in this row should be read beginning with the phrase in the row heading to aid in clarity.

Photographs of Antarctic specimens have been used where possible to aid in the identification of VME groups. The guide has been linked through colour coding to phyla in the "Guide to common deepsea invertebrates in New Zealand waters" (Tracey et al. 2007), the SPRFMO VME taxa guide (Tracey et al. 2008), and the Field identification guide to Heard Island and McDonald Island (HIMI) benthic invertebrates (Hibberd and Moore 2009). Invertebrate specimens that cannot be identified with confidence need to be identified to the lowest taxonomic level possible, retained on board, and returned frozen as biological specimens for formal identification.

Acknowledgments

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Photographs: Protected by copyrights either of National Institute of Water & Atmospheric Research Ltd, Land Information New Zealand, the New Zealand Ministry of Fisheries, the New Zealand Department of Conservation, the US Antarctic Marine Living Resources Program, or Peter Batson www.deepseaphotography.com. Photographs were also contributed by CCAMLR fishery observers.

Advice: We thank international taxonomic experts in specifying useful characters for classification of several groups, including Stephen Cairns, Juan Sanchez, Dennis Gordon, Geoff Read, Shane Ahyong, Stefano Schiaparelli, and Ole Tendal. We also thank the CCAMLR VME workshop and FSA working group for their comments and suggestions to improve the guide.

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CCAMLR VME Taxa Classification Guide. 4 p. (2009)

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Tracey D.M.; Parker, S.J.; Mackay, E.; Anderson, O.; Ramm, K. (2008). Classification guide for potentially vulnerable invertebrate taxa in the SPRFMO Area. New Zealand Ministry of Fisheries, Wellington, New Zealand.

Hibberd, T.; Moore, K. (2009). Field identification guide to Heard Island and McDonald Island (HIMI) benthic invertebrates: a guide for scientific observers aboard fishing vessels. The Department of Environment, Water, Heritage, and the Arts, Australian Antarctic Division and the Fisheries Research and Development Corporation. 158 p.

ATTACHMENT

RESOLUTION 22/XXV

International actions to reduce the incidental mortality of seabirds arising from fishing

The Commission,

Recollecting that the greatest current threats to species and populations of Southern Ocean seabirds breeding in the Convention Area are fishery-related incidental mortality and the potential impact of illegal, unreported and unregulated (IUU) fishing,

Noting the substantial reduction of incidental mortality of seabirds in the Convention Area as a result of conservation measures implemented by the Commission,

Concerned that, despite such measures, many populations of albatross and petrel species breeding in the Convention Area continue to decline and that such reductions in their populations are unsustainable,

Concerned at increasing evidence of fishery-related incidental mortality of seabirds that breed and forage in the Convention Area,

Noting that the seabirds caught are almost entirely albatross and petrel species which are threatened with global extinction,

Recognising that some populations of albatrosses and petrels will not stabilise until total incidental mortality levels are significantly reduced,

Recalling CCAMLR's collaborations with the Agreement on the Conservation of Albatrosses and Petrels (ACAP), a multilateral agreement that provides a focus for international cooperation and exchange of information and expertise towards the conservation of the declining populations of these seabirds,

Recalling repeated attempts to communicate these concerns to RFMOs,

1. Invites listed RFMOs (Appendix 1), consistent with the FAO's Code of Conduct for Responsible Fisheries and the IPOA-Seabirds, to implement or develop, as appropriate, mechanisms to require the collection, reporting and dissemination of annual data on seabird incidental mortality, particularly:

   (i) rates of incidental mortality of seabirds associated with each fishery, details of the seabird species involved, and estimates of total seabird mortality (at least at the scale of FAO area);

   (ii) measures to reduce or eliminate incidental mortality of seabirds that are in use in each fishery and the extent to which any of these are voluntary or mandatory, together with an assessment of their effectiveness;

   (iii) scientific observer programs that can provide comprehensive spatial and temporal coverage of fisheries to allow statistically robust estimation of incidental mortality associated with each fishery.

2. For high-seas areas within the range of seabirds that breed and forage in the Convention Area, where unregulated fishing takes place or where systematic data reporting has not yet been

introduced by listed RFMOs, the Executive Secretary should contact Flag States which have vessels in these areas to:

(i) express CCAMLR's interest in such seabird species,

(ii) indicate the need to require such fishing vessels to collect and report the data specified in paragraph 1 above, and

(iii) forward these data to the CCAMLR Secretariat to be made available to ad hoc WG-IMAF.

3. Encourages Contracting Parties to:

(i) request that the topic of seabird incidental mortality be included on the agenda of meetings of pertinent RFMOs and, where possible and appropriate, to send relevant experts to these meetings;

(ii) identify those areas and circumstances where incidental mortality of seabirds that breed and forage in the Convention Area occurs;

(iii) identify and continue to develop those mitigation measures which would be most effective at reducing or eliminating such mortality and to require such measures to be implemented in the relevant fisheries.

4. Encourages Contracting Parties involved with new and developing RFMOs to request that incidental mortality of seabirds is adequately addressed and mitigated. Appropriate initiatives might include:

(i) establishment or expansion of existing observer programs and adoption of appropriate data collection protocols on seabird incidental mortality;

(ii) establishment of by-catch working groups that will address incidental mortality issues and make recommendations for practicable and effective mitigation measures, including evaluation of established and innovative technologies and techniques;

(iii) evaluations of fishery impacts on the affected seabird populations;

(iv) collaborations (e.g. on data exchange) with listed RFMOs.

5. Encourages Contracting Parties to:

(i) implement, as appropriate, measures to reduce or eliminate seabird incidental mortality;

(ii) require their flagged vessels to collect and report the data specified in paragraph 1 above;

(iii) report to the CCAMLR Secretariat annually on the implementation of such measures, including their effectiveness in reducing seabird incidental mortality.

6. Requests ad hoc WG-IMAF, at its annual meeting, to collate and analyse reports relating to paragraphs 1, 2 and 5 above and advise the Commission, through the Scientific Committee, on the implementation and effectiveness of this resolution.

7. Further requests the Secretariat to bring this resolution to the attention of the RFMOs listed in Appendix 1 and seek their cooperation on its implementation.

APPENDIX 1

REGIONAL FISHERIES MANAGEMENT ORGANISATIONS IDENTIFIED FOR CONTACT WITH RESPECT TO COLLABORATIONS ON THE MITIGATION OF BY-CATCH OF SOUTHERN OCEAN SEABIRDS

Inter-American Tropical Tuna Commission (IATTC)

International Commission for the Conservation of Atlantic Tunas (ICCAT)

South East Atlantic Fisheries Organisation (SEAFO)

Indian Ocean Tuna Commission (IOTC)

Commission for the Conservation of Southern Bluefin Tuna (CCSBT)

Agreement on the Organization of the Permanent Commission on the Exploitation and Conservation of the Marine Resources of the South Pacific, 1952 (CPPS)

Southwest Indian Ocean Fisheries Commission (SWIOFC)

Commission for Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific (WCPFC)

Western Indian Ocean Tuna Organization Convention (WIOTO)
The organization does not have regulatory power.

Southern Indian Ocean Fisheries Agreement (SIOFA)