CCAMLR

Commission for the Conservation of Antarctic Marine Living Resources
Commission pour la conservation de la faune et la flore marines de l'Antarctique
Комиссия по сохранению морских живых ресурсов Антарктики
Comisión para la Conservación de los Recursos Vivos Marinos Antárticos

Scheme of International Scientific Observation
Scientific Observer's Manual
Krill Fisheries
Version 2025

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This manual is produced in the official languages of the Commission (English, French, Russian and Spanish) and may be downloaded from the CCAMLR website at the CCAMLR Scheme of International Scientific Observation webpage (www.ccamlr.org/node/73033).

Version	Release date	Observer forms covered	Description
2011	01/12/2010	2011 – 2015 Longline 2011 – 2015 Finfish Trawl 2011 – 2015 Krill Trawl	Original
2019 Draft	01/10/2018	2019 Longline 2019 Finfish Trawl 2019 Krill Trawl	Draft version presented at WG-FSA-18 for review by Members
2020	01/09/2019	2019 Krill Trawl 2022 Krill Trawl	Presented to WG-EMM-2019 for endorsement
2023	01/10/2023	2023 Krill Trawl 2024 Krill Trawl	Additional detail clarifying bird injury conditions added
2025	September 2024	2025 Krill Trawl	New sampling protocol for krill biological measurements added

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1. Introduction

The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), at its 1992 Meeting, adopted a Scheme of International Scientific Observation (SISO) as required under Article XXIV of the Convention. The scheme is designed to gather and validate scientific information essential for assessing the status of populations of Antarctic marine living resources and for assessing the impact of fishing on those populations and populations of related and dependent species.

Information from the observer program is a fundamental part of the CCAMLR management approach. The scheme provides independent scientific data that are crucial input data for the assessment of target and by-catch fish species. It also allows the implementation and effective management of measures aimed at reducing incidental mortality associated with fisheries to be monitored. Fisheries in the Convention Area take place in areas where few national research surveys are undertaken and therefore the data from the scheme are also invaluable to understanding the ecosystem of the Southern Ocean.

In order to assist CCAMLR Members and their observers in managing observation programs and recording data, the CCAMLR Secretariat, in consultation with the Scientific Committee and its working groups, have revised and updated the original *Scientific Observers Manual* (2011) to better define best practice and guidance for standard observer tasks. This manual provides guidance on standard tasks and requirements for observers as well as supplementary information to aid data collection requirements. Feedback on the manual, or any queries regarding the SISO program, can be addressed to observer.scheme@ccamlr.org.

2. SISO observer roles and responsibilities

A SISO observer deployed on a vessel engaged in scientific research, or harvesting of marine species within the CAMLR Convention Area is required to observe and report on the operation of vessel activities, and take independent samples of catches from vessels. A comprehensive description of functions and tasks required of SISO observers can be found in Appendix 2, and in Annex 1 of the Text of the Scheme of International Scientific Observation. The requirements for observers, Members who deploy observers and vessels who receive observers are also detailed in the main body of the text (https://www.ccamlr.org/node/74295). Your employing organisation should discuss these requirements in detail during training and briefing events, particularly the requirements for vessels that you are deployed onto.

A SISO observer is a scientific observer, therefore they are responsible for collecting reliable and accurate data as instructed. The evaluation or interpretation of data by observers is not a requirement by CCAMLR, and observers should be vigilant in ensuring such data or personal opinions are not recorded or reported. Additionally, SISO observers do not have enforcement powers, therefore should not attempt to guide vessels on CCAMLR regulations. Any enquires from the vessel regarding interpretation of CCAMLR regulations should be directed to the vessel's Flag State representatives, or to the Fisheries Monitoring and Compliance section of the CCAMLR Secretariat (email: ccamlr@ccamlr.org).

Vessels operating in the krill fishery are required to carry observers that are appointed 'in accordance with the CCAMLR Scheme of International Scientific Observation or any other observer appointed by the Contracting Party' (see Conservation Measure (CM) 51-06). Where the observer is appointed by the Contracting Party, i.e. from the same country as the vessel, CM 51-06 specifies that the 'scientific data collection and sampling protocols followed by that observer shall conform to the requirements of the CCAMLR Scheme of International Scientific Observation and the protocols found in the CCAMLR Scientific Observers Manual, including application of the priorities and work plan defined by the Scientific Committee. Data and observer reports shall be submitted to CCAMLR according to the requirements of the CCAMLR Scheme of International Scientific Observation for inclusion in the CCAMLR database'.

3. Definition of Terms

The following definitions and explanations apply to commonly used terms in the observer logbooks and in this observer manual. Please note that this is not a comprehensive description of each logbook field, rather it is for terms where confusion may arise when comparing the terminology with other fishery operations.

By-catch: By-catch includes all living and non-living material (excluding target species) which is caught whilst fishing. This includes discards and the part of the catch which is not landed but affected by interactions with fishing gear.

Bird Scaring Device: A bird scaring device or Bird Exclusion Device (BED) is used to discourage birds from accessing baits during hauling of longlines. The guidelines for a BED are described in CM 25-02, Annex 25-02/B (https://cm.ccamlr.org/en/measure-25-02-2023).

Conservation measures: A series of regulations for CCAMLR fisheries.

Conversion factor: The ratio between the total weight of a fish or fishes caught (referred to as green weight) divided by the weight of the same fish or fishes after processing (referred to as processed weight). The conversion factor is used to calculate the total catch taken for a particular species.

Designating Member: The CCAMLR Member providing the observer to the vessel.

Discards: Whole fish or other organisms returned to the sea dead, or with low expectation of survival.

EEZ: Exclusive Economic Zone.

Haul: The act recovering the fishing gear. For trawl fisheries, hauling begins when the vessel starts winching in the net from the assigned fishing depth. The haul ends when net has been recovered on board the vessel.

IMAF: Incidental mortality associated with fishing. Refers to marine mammal and seabird mortalities.

IUU: Illegal, unreported, or unregulated fishing.

Net monitor cable: A wire commonly suspended from the trawl gantry running to net monitoring equipment attached directly to the net.

Observation: An observation is an independent data record, or description of an event collected or verified by an observer. As such, an observation is not any information that is provided by a third party which cannot be independently confirmed. An example would be recording the length of a bird scaring line without actually measuring it.

Observation program start date: The date you board the vessel beginning your deployment as an observer on that vessel.

Observation program end date: The date you disembark the vessel ending your deployment as an observer on that vessel.

Offal: Bait and by-products from the processing of catch, including parts or sections of fish or organisms which are by-products of processing.

Receiving Member: The CCAMLR Member receiving the observer and the Flag State of the vessel.

Tally period: The observation period where an observer records independent catch and bycatch data from the deck of the vessel during a haul or trawl.

Trawl: A trawl refers to the act of setting, towing and hauling a net on a conventional trawl vessel. The trawl start time is when the net is released into the water from the trawl deck. Fishing start time is when the net reaches the fishing depth, whilst end fishing time is when the vessel begins winching in the net. Trawl end time is when the net is retrieved on board the vessel. For continuous trawl vessels, a single trawl may last many days, therefore for observation and catch reporting purposes, a trawl is defined as a two-hour period of continuous fishing.

Streamer line: A streamer line refers to any bird-scaring device which consists of a pole and long section of line with streamers attached. This may be positioned over the stern outside of the trawl warps. This type of gear has also been described in other publications as 'tori pole', 'bird line' or 'pole and line'. The CCAMLR-configured streamer line is the design adopted by CCAMLR and described in CM 25-02, Annex 25-02/A (https://cm.ccamlr.org/en/measure-25-02-2023).

Stick water: A liquid discharge produced during fish processing. This is not the same as offal and discard discharge.

Warp strike: A collision between a seabird or a marine mammal and the warp cables attached to trawl nets.

4. CCAMLR regulations

CCAMLR implements a comprehensive set of measures in order to support the conservation of Antarctic marine living resources and the management of fisheries in the Southern Ocean. These conservation measures are reviewed and developed at each annual meeting of the Commission, and subsequently implemented by Members during the ensuing intersessional period and fishing season. Conservation measures are published on the CCAMLR website (https://cm.ccamlr.org).

SISO observers should be supplied with an electronic copy of the CCAMLR conservation measures, although as noted, a SISO observer is not required to interpret or instruct vessels on the implementation of conservation measures. However, observers must pay particular attention to following conservation measures as data they record will verify vessel compliance to these conservation measures. They are:

(i) CM 25-03. Minimisation of the incidental mortality of seabirds and marine mammals in the course of trawl fishing in the Convention Area. This conservation measure details trawling practices and offal restrictions for trawl vessels.

(ii) CM 26-01. General environmental protection during fishing. This conservation measure details waste disposal guidelines for all fishing vessels in the Convention Area.

The appropriate subarea or division conservation measures in the 51 series for krill fisheries should be studied prior to deployment, as well some other general measures (listed below). Refer to Appendix 1 for a map of CCAMLR subareas.

(i) CM 51-01: Precautionary catch limitations on *Euphausia superba* in Statistical Subareas 48.1, 48.2, 48.3 and 48.4.

(ii) CM 51-02: Precautionary catch limitation on *Euphausia superba* in Statistical Division 58.4.1.

(iii) CM 51-03: Precautionary catch limitation on *Euphausia superba* in Statistical Division 58.4.2.

(iv) CM 51-04: General measure for exploratory fisheries for *Euphausia superba* in the Convention Area.

(v) CM 51-06: General measure for scientific observation in fisheries for *Euphausia superba*.

(vi) CM 51-07: Interim distribution of the trigger level in the fishery for *Euphausia superba* in Statistical Subareas 48.1, 48.2, 48.3 and 48.4.

5. General operational procedures

SISO observers are required to complete two documents during their deployment. Firstly, an electronic logbook, an MS Excel file containing a series of worksheets, is used to record all data collected on a trip. The second document is a cruise report (using an MS Word template), which provides commentary on the trip and can be used to give more detailed descriptions of any unusual events or issues during the deployment. Whilst a captain may request an observer's data during a cruise, the cruise report is a confidential document. Once the Secretariat receives a cruise report it is provided to the Commissioner of the Receiving Member as a documented record of the trip.

The quality of the data is of utmost importance for the work of the Scientific Committee, and therefore relies on the accurate recording of observation periods, the time of events, and precise biological measurements and species identifications. The utility of an observer's work is not related to the quantity of information collected during a cruise.

It is also important to be able to distinguish between data collected by observers and by crew. For this reason, the data collection requirements and reporting fields in the electronic logbooks have mostly been designed to allow independent data collection by the observer. There are also fields on the relevant forms to indicate which observer collected particular data to allow inter-observer differences to be examined. It is important that these are completed accurately to allow for data validation.

The electronic logbook, cruise report template and detailed instructions on how to complete the logbook can be found on the CCAMLR website for each fishery (https://www.ccamlr.org/node/74640).

6. Units and formats

The units of reporting for specific fields are specified throughout the observer logbooks. Observers should ensure that the information recorded is in the specified unit and format indicated. General formats that apply throughout the logbooks are as follows:

Field	Format	Description
Date	dd/mm/yyyy	d = day, m = month y = year (e.g. 01/12/2018)
Time	hh:mm	h = hour, m = minute. All times are recorded in 24 hour format (e.g. 21:20, NOT 9:20pm) and are recorded in UTC, **not** local times.
Latitude and longitude degrees	-dd for latitude ±ddd for longitude	d = degrees (e.g. -52 for latitude, 172 for longitude) positive for east longitude, negative for west longitude
Latitude and longitude decimal minutes	MM.mm	M = minute, m = decimal minute (e.g. 26.12)

7. Standard measurements

7.1 Krill

Krill should be measured from the front of the eye to the tip of the telson, to the nearest millimetre (Figure 1). To obtain the correct lateral measure between these two points, please ensure that the tail is in a straight orientation in line with the body of the animal. The body should not be compressed or stretched to achieve this. Placing the krill on a graph paper background can useful in ensuring the lateral measurement is straight.

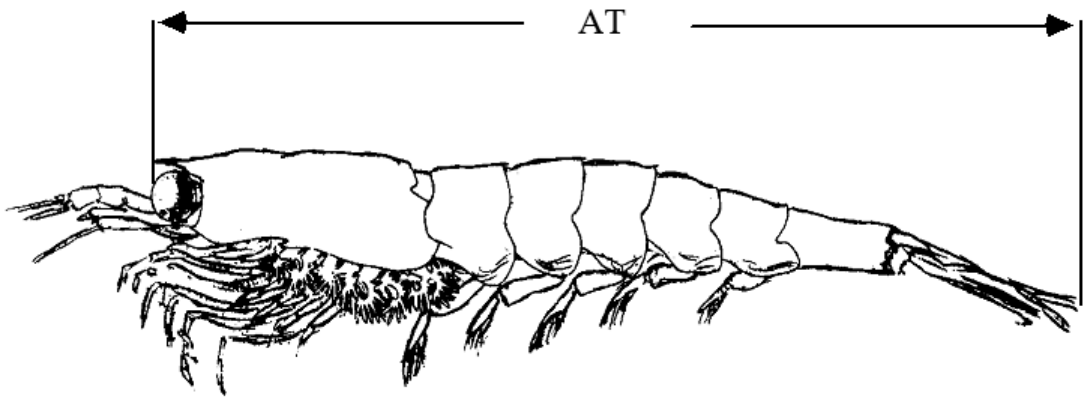


Figure 1: Measurement of total body length (AT) of krill.

7.2 Fish

Fish should be measured on a flat, non-slip measuring board or table provided by the vessel as part of the observer's workstation. Ensure that the snout of the fish is butted up to the end of the measuring board, the mouth is closed and the body is straight in a natural position.

For fish with a distinct tail, measure for both standard (SL) and total length (TL) to the nearest cm. SL is measured from the most anterior part of the snout to the end of the vertebral column (Figure 2). An easy way to determine SL is to bend the tail upwards and a crease will form at the point of the last caudal vertebra. TL is defined as the distance from the most anterior part of the snout to the furthest tip of the tail. Lightly 'streamline' the tail before measuring, i.e. the tail should not be spread to its extreme, nor completely compressed.

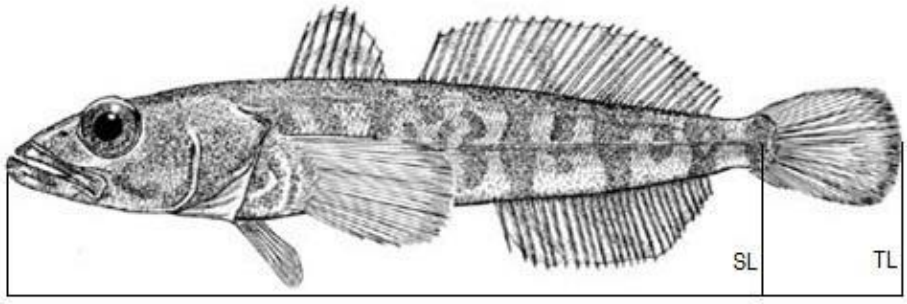


Figure 2: Measurement of toothfish and most other finfish by-catch species.

For *Macrourus* spp. TL and snout to anus (SA) length should be measured to the nearest cm. SA is measured from the tip of the snout to the anus (Figure 3).

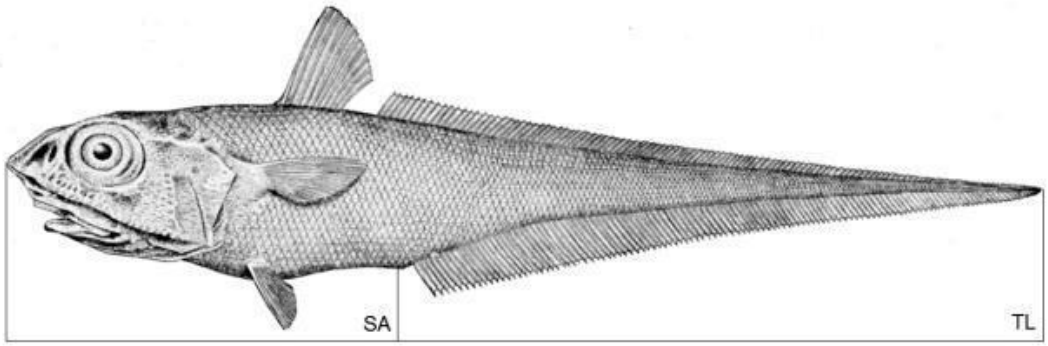


Figure 3: Measurement of *Macrourus* spp.

8. Weights

Weights are in kilograms in the krill observer logbook, please ensure you record the data using this metric. Whilst it is not a specified requirement, the Scientific Committee strongly recommends the use of electronic motion compensating scales for all measurements. There are sections in the logbooks and in the cruise report for you to indicate the weighing equipment used during your deployment.

9. Krill Sampling Protocol

Length measurements and sex and stage determinations of krill will provide data that gives insight into its demographic structure (proportion of juvenile and adult krill, sex ratio). By determining the sex and length of a random subsample of ~200 krill individuals, a representative picture of the targeted krill swarm`s demography can be drawn. Simultaneous comparison of data on position, date, time of day, fishing depth and bathymetry, provides valuable insights into understanding krill distribution, behaviour, and life history across seasons and may contribute to managing the krill fishery. The following krill sampling protocol was developed at the Krill Observer Workshop in 2023 (WS-KFO-2023).

Material:

- 3x Plastic buckets/ containers (~5 L volume), can be white or transparent (see example in Figure 4)
- 1x One litre container/ bucket if sampling from the fishpond/ hold
- 1x Shovel
- 2x Graduated measuring jugs (500 mL volume, see Figure 4)
- 1x Ladle
- 1x Laminated millimetre paper (spanning at least 0 to 70 mm)
- Paper tissue
- 1x Stereomicroscope (minimum requirements detailed in Scientific Observer Manual -Krill Fisheries)
- 1 x Set of forceps

Sampling:

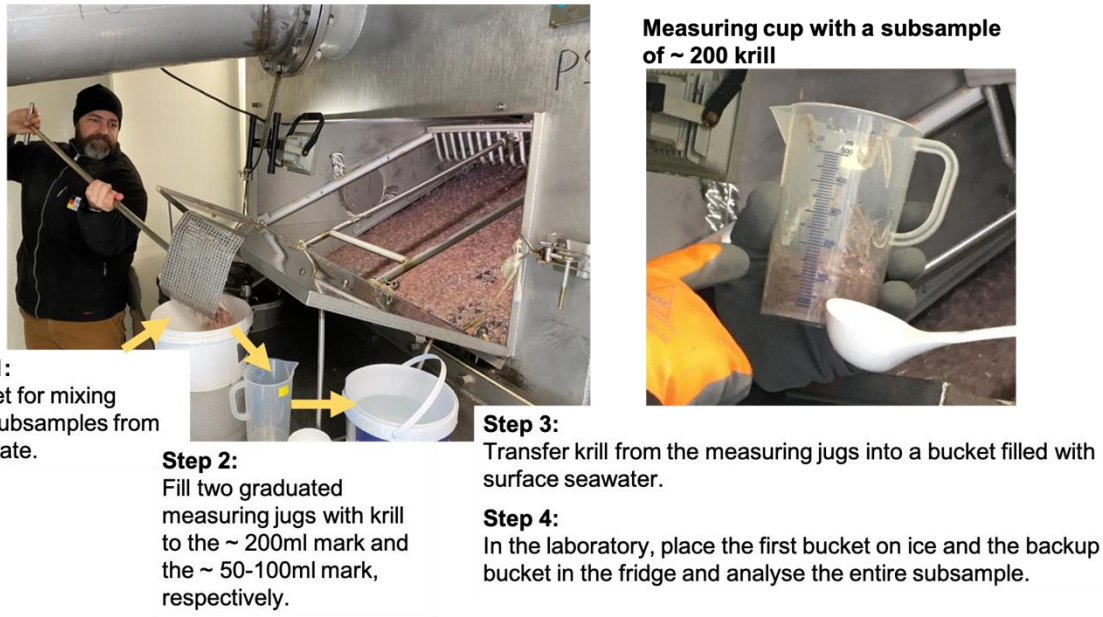
Prior to the krill sampling procedure, have all the devices you need in place (see Material above) and check the steps in Figure 4:

Three buckets or containers, with two of them filled with cool surface seawater; one litre container or bucket if sampling from fishpond, one shovel if sampling from conveyer, two Graduated measuring jugs, a ladle.

Work with the vessel to determine the safest and most appropriate location to take fresh krill samples. Ideally these should be taken from the fishpond or hold as soon as practicable after the landing of a haul. If it is not possible to take samples from the fishpond or hold then samples can be taken from the factory conveyer belt provided they are fresh, and not from old krill landed in previous hauls. It is not recommended to take samples directly from the trawl net as the trawl deck can be a hazardous environment.

- Take 3 x one litre samples of krill, ideally from separate locations within the fishpond or hold if possible. If sampling from the conveyer belt take three shovelfuls of krill. Place either your 3 x one litre samples, or 3 x shovelfuls into a bucket that is not filled with seawater. Mix gently without damaging the krill. If required add some water to the bucket to ensure that krill are not damaged during mixing (see step 1 in Figure 4).
- From this bucket, fill one graduated measuring jug to the ~200mL mark with the ladle and the other one to the ~50-100mL mark (see step 2 in Figure 4). The 200mL size is suggested as this should contain approximately 200 krill, however if krill abundance is variable, this 200mL sample could be adjusted appropriately.
- The krill in each jug should be transferred to each separate buckets filled with cool surface seawater to prevent degradation of the krill (see step 3 in Figure 4).
- In the laboratory, place the bucket with the ~200ml krill, when possible, on ice and store the bucket with the ~50-100mL subsample in a fridge (see step 4 in Figure 4).

The bucket with the ~50-100mL subsample will be used as a backup sample in case the first bucket does not contain at least 200 krill. Have the laminated millimetre paper, forceps and paper tissue beside the stereomicroscope in place before starting the length-frequency measurements and sexing the krill.



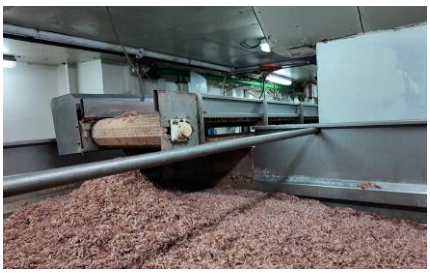


Figure 4: Procedure of krill sampling from the dewatering grate (above). For trawlers without a dewatering grate, the conveyer pond (left) is suitable for taking samples.

Length-frequency measurements and sexing krill

To ensure a representative measurement of the length-frequency and sex distribution of the sampled krill, it is essential that always all krill individuals in a bucket are processed (length and sex determination), irrespective of the number of individuals in the bucket. Therefore, start with the bucket with the ~200ml krill subsample and process all krill as described below. If all krill in this bucket are processed, and the number of krill is below 200, process all krill from the bucket containing the ~50-100mL backup subsample.

For each krill individual, determine and note the length and sex. To determine the length, take one individual with a forceps from the bucket and tap them a few times on the paper tissue to remove the water. Place the krill on the laminated millimeter paper (make sure the animal is stretched out horizontally), and measure the length from the anterior margin of the eye to the tip of the telson, excluding the setae, to the nearest millimetre below. To determine the sex, krill must be checked for the presence of the male and female copulatory organs, petasma and thelycum, respectively. Please following the sexing guide in in section 10.

10. Krill sexing and maturity stages

Krill display distinct features of sexual dimorphism which make it possible to distinguish males from females after krill have entered the final (adult) phase of maturation. In addition to these differences in overall morphology (see Figure 5 for general krill anatomy terms), there are differences in the external sexual characteristics that assist in the determination of sex and maturity stage. As the maturation process progresses to the adult stages, female krill have a proportionately thinner abdomen and a proportionally longer carapace than males. In addition to having a shorter carapace, adult males also have distinctly larger eyes than female krill (see Figure 9).

Using these relative differences is straightforward with experience and can be confirmed using the external sexual features. However, if you cannot determine the sex of the krill visually (i.e. no eggs are visible for a gravid female or an obvious petasma is not visible for a mature male) it is recommended that you determine the sex under the stereomicroscope.

The following key can be used to determine the correct maturity stage. Only freshly caught animals should be used and examined in a cool, well-lit environment:

Step 1. Presence of the petasma

This organ in its various forms (stages of development) appears in males from approximately 28 mm in length. The petasma is usually folded back and tucked inside the plate of the first swimming leg next to the lobes. Figure 6 shows the endopod differences between males and females. Under the stereomicroscope, place the individual laterally and check the inner side of the first pleopod for the presence of a petasma.

Step 2. Presence of the thelycum

Adult female krill can be identified by the presence of the thelycum, which is often reddish in colour (Figure 6). In the case of gravid females, the carapace is highly swollen relative to non-gravid females (Figure 10). Under the stereomicroscope, place the individual on its back to look at it ventrally and check between the last pair of exopods for the thelycum.

Step 3.

If no petasma or thelycum can be found, krill are categorized as ‘juvenile’ when smaller than 31mm and when larger than 31 mm as ‘adult’ with sex ‘unknown’

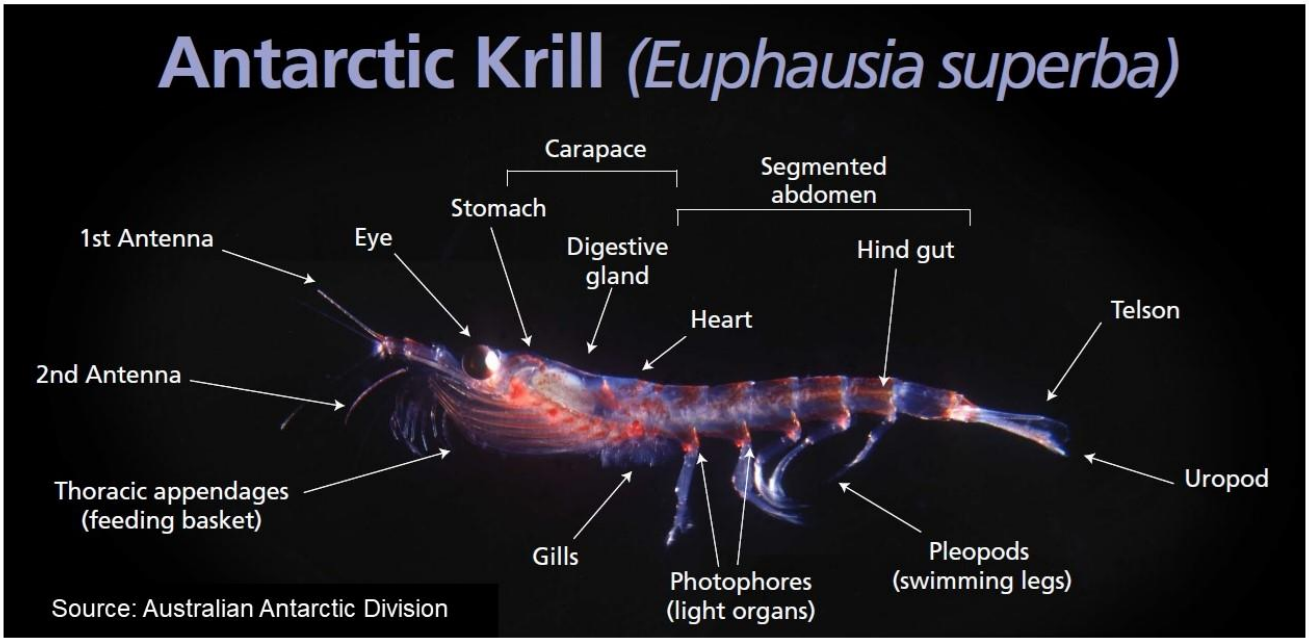


Figure 5: Krill morphology and anatomical terminology. Photo: Australian Antarctic Division.

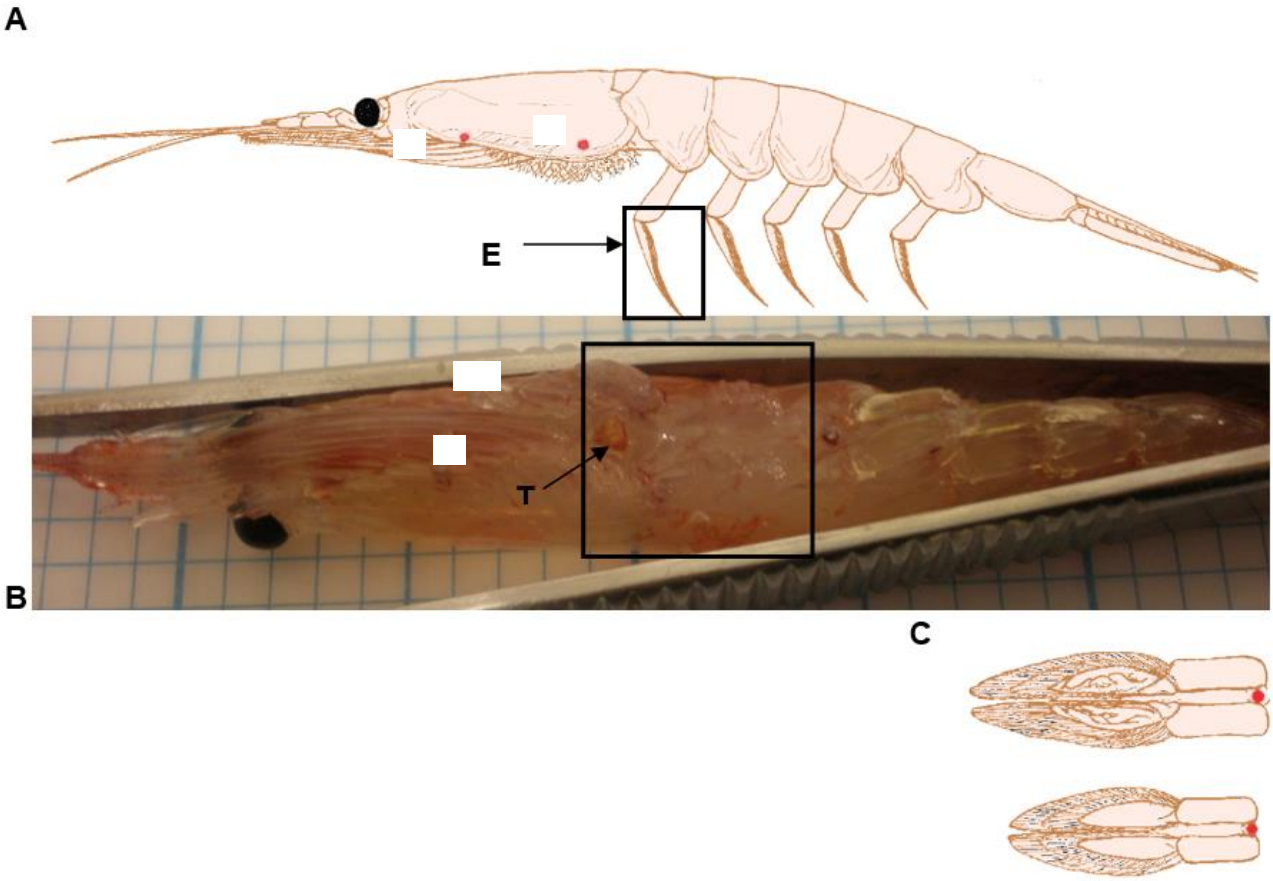


Figure 6: *Euphausia superba* genital area used for sexing and staging. **A**. Lateral view **E**. First pleopod **B**. Ventral view of mature female **T**. Thelycum **C**. Upper - first pleopod of maturing male, ventral view, showing petasma. Lower - female or juvenile. Drawings: Marakov and Denys (1980). Photo: Lynsey Marie Smith. MRAG.

Figure 7: Male (left) and female (right) first pleopods clearly showing the structure of the petasma developed on endopodites of males (left) but not for females (right). Photo: Yellow Sea Fisheries Research Institute.

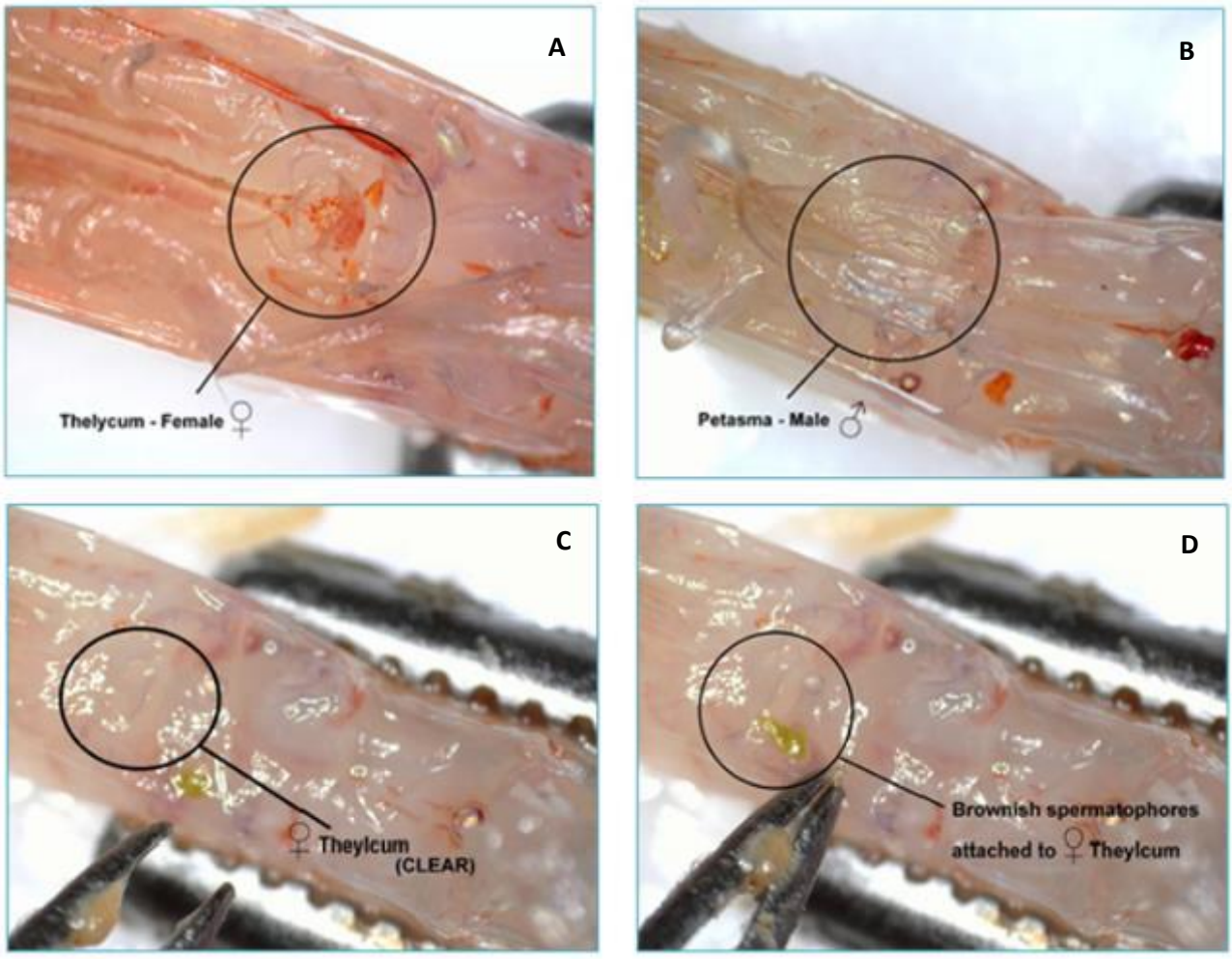


Figure 8: *Euphausia superba* copulatory organs used for sexing males and females. Photos: Nicholas Idowu, MRAG.

Figure 9: Comparative photo of male (top) and female (bottom) *Euphausia superba* showing the proportionally longer carapace for females and larger eyes for males. Photos: Yellow Sea Fisheries Research Institute.

Figure 10: Gravid female *Euphausia superba* showing the swollen abdomen. Photos: Yellow Sea Fisheries Research Institute.

11. Sampling and identifying by-catch species

The sampling and identifying of by-catch species are a critical part of an observer's workload, as it allows the assessment and quantification of fishery ecosystem impacts. By-catch sampling protocols are to identify all by-catch species, their weight and number present from one 25 kg sample from an individual haul.

Observers are requested to identify by-catch species to the lowest taxonomic level possible, and because of their expertise, it is beneficial to assist vessels with their species identification for their by-catch reporting requirements. However, observers should only provide identification assistance. The separation and quantification of by-catch is a vessel responsibility.

Because of the size and number, an extensive list of materials for identifying by-catch species are housed separately on the CCAMLR website: www.ccamlr.org/node/77322.

Observers should be provided with these materials before deployment by their employing organisation. In particular the CCAMLR by-catch guides and the *Fishes of the Ross Sea Region* guide provide extensive photos and descriptions of many common by-catch species, and keys for determining differences between *Macrourus* species, and larval fish bycatch.

12. Seabird and marine mammal interactions with fishing gear

Observers are required to monitoring marine mammal and seabird interactions with fishing gear in all fisheries. It is vitally important than an observer differentiates between observations that are recorded during the observer's dedicated observation periods, with those that an observer is alerted to by the vessel as this affects mortality calculations. For example, if an observer is given a dead bird by the vessel crew and told that it was found during hauling, this must be clearly stated in the logbook.

Observations are conducted with the following objectives:

(i) to document and quantify seabird and marine mammal catch rates and determine the specific identity, age and sex of all seabirds caught

(ii) assess the relative vulnerability of different seabird and marine mammal species

(iii) monitor the mortality of seabirds and marine mammals per unit of fishing effort

(iv) document all aspects of a vessel's fishing strategy, methods and equipment which have an impact on seabirds and marine mammals

(v) assess the effectiveness of CCAMLR measures aimed at reducing the incidental mortality of seabirds and marine mammals

(vi) ascertain what, in terms of a vessel's fishing operations, contributes to the seabird and marine mammal by-catch rates observed, and to collect data relevant to factors that influence seabird by-catch rates

(vii) to collect and retain biological samples.

For collection of seabirds and marine mammal data, the highest priorities for a single scientific observer are as follows:

(i) Record mortality, injury and entanglement of seabirds and marine mammals. The level of observation will vary between fisheries, and on the tasking of the observer. In all situations observers should attempt to maximise the level of coverage of trawl hauls and longline hooks hauled. It is essential that the proportion of fishing effort observed is recorded to allow estimation of total incidental mortality.

(ii) Trawl warp strikes. Conduct at least one warp-strike observation per 24-hour period.

(iii) Record interaction of marine mammals with fishing vessels and gear. During each haul or trawl observation period, record any interactions with the vessel that do not result in mortality, injury or entanglement.

(iv) Verify that mitigation measures used by vessels comply with CCAMLR requirements, and describe any additional measures, or measures that differ from CCAMLR requirements.

The classification of bird condition after interaction(s) with fishing gear were developed by the ad-hoc Working Group on IMAF in 2004 (Ad Hoc WG-IMAF-04 paragraphs 6.214-6.216) and are defined as follows:

(i) Alive landed on board and released uninjured

(ii) Alive, landed injured on board. a bird should be recorded as injured if it has any of the following pathologies: fracture of a wing bone, a leg bone or beak, more than two primary feathers on either wing that have broken feather shafts, substantial damage to the patagial tendon (indicated by a drooping wing or the inability to fly upon release), an open wound (other than superficial injuries in which there is no subcutaneous muscle damage), waterlogged or hydrocarbon soiled plumage, or any bird released with a hook in situ.

(iii) Dead not landed on board – those birds observed to be killed by direct interaction with fishing gear but not landed on the fishing vessel.

(iv) Dead landed on board – those birds landed on the vessel that are dead (i.e. show no muscle movement or corneal reflex)

The CCAMLR website has extensive resources on seabird identification, a self-training tool to assist observers to identify seabirds and marine mammals, and several posters in multiple languages for educating crew and vessels on reducing impacts on marine species (www.ccamlr.org/node/77322).

13. Reference

Makarov, R.R. and C.J. Denys. 1981. Stages of sexual maturity of *Euphausia superba* Dana. BIOMASS Handbook, 11.

14. CCAMLR observer resources

CCAMLR data forms and instructions:

www.ccamlr.org/node/74640

By-catch guides, sampling protocol and training materials:

www.ccamlr.org/node/77322

Tagging program ordering information:

www.ccamlr.org/node/76310

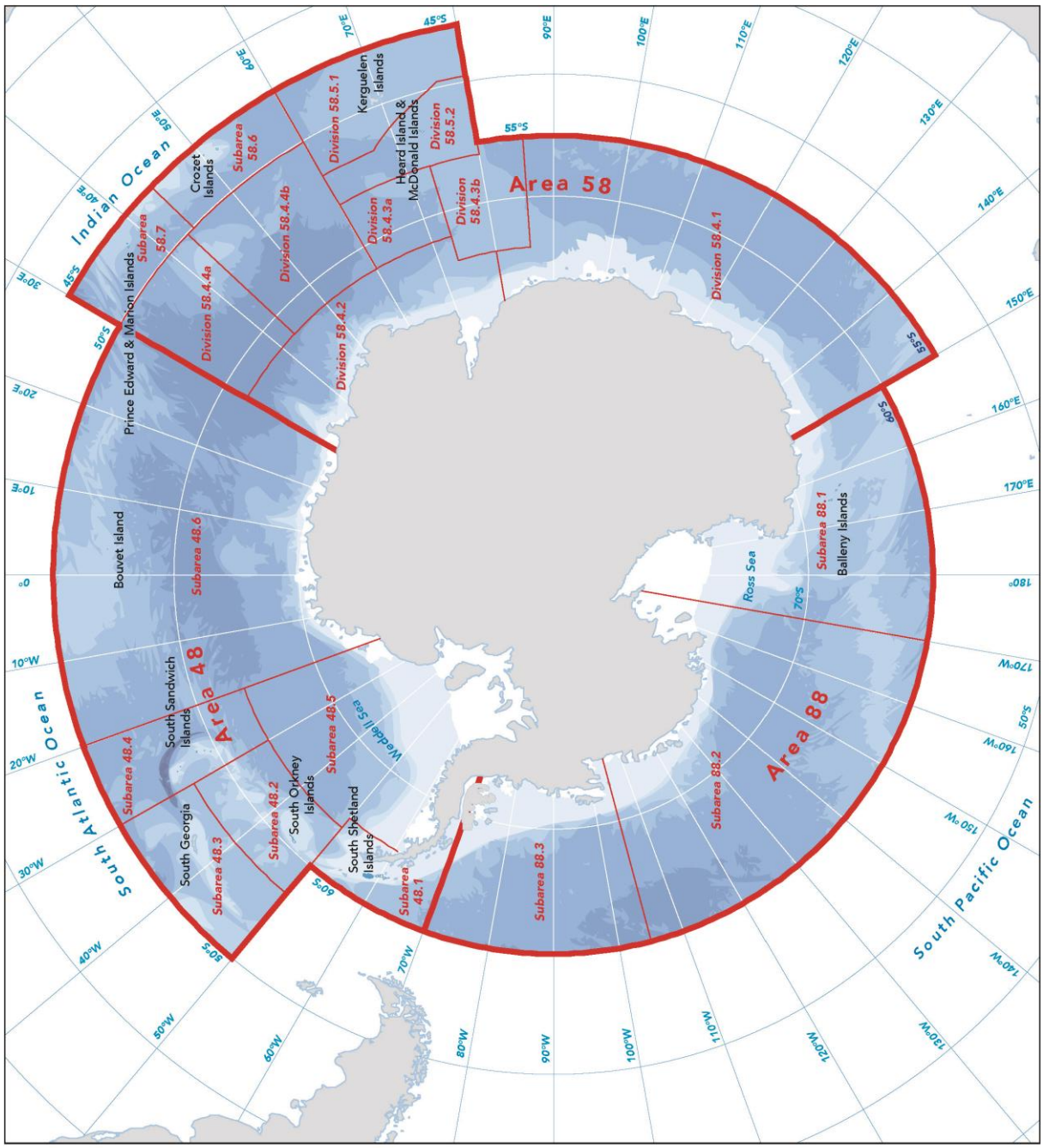
CCAMLR conservation measures:

www.ccamlr.org/node/57043

Text of the Scheme of International Scientific Observation:

www.ccamlr.org/node/74295.

15. Appendix 1 – Map of the CAMLR Convention Area



CCAMLR

Commission for the Conservation of Antarctic Marine Living Resources

Convention Area
Statistical Areas

0 500 1000 1500 2000 km

1:45 000 000

South Pole Lambert Azimuthal Equal Area projection

http://gis.ccamlr.org

16. Appendix 2 – Functions and tasks of Scientific Observers appointed in accordance with the Scheme of International Scientific Observation

1. The function of scientific observers on board vessels engaged in scientific research or harvesting of marine living resources is to observe and report on the operation of fishing activities in the Convention Area with the objectives and principles of the Convention for the Conservation of Antarctic Marine Living Resources in mind.

2. In fulfilling this function, scientific observers will undertake the following tasks, using the observation formats approved by the Scientific Committee:

(i) take samples of catches to determine biological characteristics

(ii) record biological data by species caught

(iii) record by-catches, their quantity and other biological data in accordance with relevant conservation measures

(iv) record entanglement and incidental mortality of sea birds and marine mammals

(v) report on the measures taken to avoid incidental mortality

(vi) record the procedure and parameters by which declared catch weight is measured

(vii) prepare reports of their observations using the observation formats approved by the Scientific Committee and submit them to CCAMLR through the Designating Member

(viii) assist, by mutual agreement of the Designating Member and Receiving Member, the vessel in the catch recording and reporting procedures

(ix) undertake other tasks as may be decided by mutual agreement of the Designating Member and Receiving Member

(x) collect and report data on sightings of unauthorised or unidentifiable fishing vessels, unmarked fishing gear, and recovery of fishing gear in the Convention Area, including vessel type identification, vessel position and activity and gear type

(xi) collect information on fishing gear loss and garbage disposal by fishing vessels at sea.