

CCAMLR XXIII

Commission for the Conservation of Antarctic Marine Living Resources

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INTRODUCTION

CCAMLR - the Convention for the Conservation of Antarctic Marine Living Resources - manages fisheries taking into account the marine ecosystem. Targets for fishery are mainly krill, toothfish, and icefish, and in smaller scale, squid and crabs. For the purpose of managing target species, as well as dependent and related species, the Commission meets annually and decides upon Conservation measures and other recommendations. It receives scientific advice from its Scientific Committee. The Scientific Committee receives advice and input from its working groups, which meet annually.

In 2004 Commission was chaired by Mr K. Yonezawa (Japan) and met from 25 October to 5 November, and the Scientific Committee met from 25 – 29 October, being chaired by Dr. R. Holt (USA).

The working group on Ecosystem Monitoring and Management (WG-EMM) met in Siena, Italy from 12 to 23 July, and was convened by Dr. R. Hewitt (USA), including the subgroup on Protected Areas meeting, chaired by Dr. P. Penhale (USA), and a workshop on Plausible Ecosystem Models for testing Approaches to Krill Management, that was convened by Dr. A. Constable (Australia). The working group on Fish Stock Assessment (WG-FSA), chaired by Dr. S. Hanchet (New Zealand) and the working group on Incidental Mortality in Antarctic Fisheries (WG-IMAF) meeting, chaired by Dr. J. Croxall, met in Hobart, Australia, between 11 and 22 October. The working group on Statistical Assessment Methods (WG-SAM), convened by Dr. A. Constable met in Siena, Italy from 5 to 9 July.

CCAMLR conducts an Ecosystem Monitoring Program (CEMP), and receives data from scientific surveys carried out by Member countries, or from coordinated CCAMLR surveys such as the 2000 survey on krill.

For better managing the living resources, the convention area, corresponding to the Atlantic, the Pacific and the Indian Ocean sectors of the Southern Oceans, is divided in sub-areas, divisions, and in some regions in small scale management units (SSMU).

CCAMLR has 24 Members, and all attended the 2004 meetings: Argentina, Australia, Belgium, Brazil, Chile, European Community, France, Germany, India, Italy, Japan, Republic of Korea, Namibia, New Zealand, Norway, Poland, Russian Federation, South Africa, Spain, Sweden, Ukraine, United Kingdom of Great Britain and Northern Ireland, United States of America and Uruguay. Observers from the Acceding States Mauritius, the Netherlands and Peru, and from non-Contracting Parties Mozambique and Indonesia, along with observers from the Antarctic and Southern Ocean Coalition (ASOC), the Commission for the Conservation of Southern Bluefin Tuna (CCSBT), the Coalition of Legal Toothfish Operators (COLTO), the Food and Agriculture Organisation of the United Nations (FAO), the World Conservation Union (IUCN), the International Whaling Commission (IWC), and the Scientific Committee on Antarctic Research (SCAR), also attended the Scientific Committee meeting.

CCAMLR SCHEME OF INTERNATIONAL SCIENTIFIC OBSERVATION

Scientific Observers were deployed on all finfish fisheries and in some krill fisheries in the Convention area. The logbooks and reports were submitted electronically. This allowed the

management of the fisheries in all statistical Areas, Sub-Areas and Divisions, according to the Conservation Measures in force. The information that was collected was fundamental for the work of the working groups WG-EMM, WG-FSA and WG-IMAF, providing data for stock assessments and the establishment of the catches allowed for the following fishing season. In 2004 a total of 55 observation programs were undertaken (for 44 longline and 11 trawl vessels), and one cruise on board a krill fishing vessel.

A high importance is given to the Scientific Observers, not only because of data on fish, krill, and fisheries, but also because of reports on bycatch of birds and seals. Observers on krill fishing vessels noted the presence of fur seals in all fishing operations and described several incidental entanglements. A dialog will be established with krill fishing vessel operators in order to obtain information on krill distribution patterns, over-wintering tactics of krill, interactions between krill predators and the fishery, by-catch and the behaviour of fishing vessels. The capture of acoustic data from echo-sounders used routinely on board fishing vessels could be valuable in describing distribution patterns. Members with an interest in collaborating on this topic were encouraged to develop appropriate proposals.

It was agreed that there should be a major review of the Scientific Observers Manual format, structure and contents. Among other topics it should take into consideration research priorities for different fisheries, target and by-catch species and the types of data to be collected to allow research priorities to be met.

Even considering the workload of Scientific Observers on board fishing vessels, and the amount of data and information to be collected and reported, perhaps a co-ordinated sampling program could get material for SCAR-EBA and EVOLANTA scientists that could report back to CCAMLR on differences of stocks or distribution of populations of fish, krill and predators, and on the biology of the target and by-catch species.

ECOSYSTEM MONITORING AND MANAGEMENT

Status and trends in the Krill-centric ecosystem and CEMP

The CCAMLR Ecosystem Monitoring and Management Program (CEMP) aims to detect and record significant changes in critical components of the ecosystem, and to distinguish between changes due to the harvesting of marine resources and changes due to environmental variability. It includes the monitoring of seabirds such as penguins, albatross and petrels, and seals. It is based on the krill centred ecosystem.

Time series of non-CEMP data (e.g. derived seabird and pinniped monitoring programs) are of value in addressing the objectives of CEMP. The most difficult is to distinguish between possible causes of ecosystem change. They can result from the krill fishery, or from environmental changes, or natural biological variability or cycles of the target species. That is why it is important to apply appropriate levels of precaution when taking decisions regarding the impacts of the krill fishery on the ecosystem. Options for subdividing krill catch limits among SSMUs will be evaluated on a workshop on Management Procedures that will take place in 2005.

Based on information submitted on the status of krill predators, it was noted that some chinstrap penguin populations at Cape Shireff and chinstrap, gentoo, macaroni, and eastern rockhopper penguins, and Crozet shags, at Marion Island, continued to decline, possibly due to the reduced availability of prey. The krill density and distribution might have been influenced by the input from the Weddell Sea, and/or large-scale climatic variability that has affected the dynamics of the marine ecosystem in the southwest Atlantic Ocean, and possibly representing propagation of the El Niño related signals from the Pacific Ocean.

Thus, it was noted that it is important to examine the ecosystem changes and variability through field projects, in particular those which will be developed for implementation during the IPY.

The Ross Sea Shelf Ecosystem was considered a unique and important system, and the recent exploitation of *D. eleginoides* and mink whales could interfere with a system relatively unaffected by anthropogenic activities. Thus, there will be a research cruise focusing on environment-krill-whale interaction in the Ross Sea and adjacent waters. Results should be compared with the South Atlantic system.

The interactions of all fisheries with different elements of the environment were mentioned, including longline with benthos, and discussions will follow on how matters relating to ecosystem interactions involving fish and squid should be considered. This will be deferred until modelling initiatives involving food chains with considerable dependence on fish and squid are developed.

Acoustic Surveys and Analysis Methods

There is a need to establish an advisory group on acoustic surveys because of technical and scientific difficulties to interpret results on krill and on icefish. This group should develop, review and update as necessary protocols on the conduct of acoustic surveys to estimate biomass of nominated species and the analysis of acoustic survey data to estimate the biomass of nominated species, including estimation of uncertainty in those estimates.

There will be two acoustic surveys for krill in 2005, one in the southwest Indian Ocean by Australia and another in the Ross Sea by Japan.

From my personal point of view, the Antarctic science as such would gain if more integration could be achieved between expeditions or surveys targeting krill, fish, birds and seals (and other organisms as well). More collaboration could happen between SCAR and CCAMLR programs. Data could be collected in such a way that they would be usable for everybody, even if the objectives in SCAR and in CCAMLR are different. This would imply in co-ordination between the LSSSG of SCAR and the Scientific Committee of CCAMLR, and their respective subsidiary bodies, and the willingness of Members to accept such changes, the co-ordination of resources and of actions of different Ministries. Perhaps this is a bit utopic, but in the long term, feasible. The international Polar Year might be a good moment to try this co-ordination.

Management of Protected Areas

The management plans for Cape Shirreff and San Telmo Island, Livingstone Island, South Shetland Islands were reviewed and approved. Suggestions for improvement of the Port Foster, Deception Island were suggested to the originators of the plan, notwithstanding approval.

The proposal of an ASPA at Edmondson Point was received too late to be considered by the Advisory Group on Protected Areas prior to the WG-EMM meeting, and therefore could not be considered by the Scientific Committee. Some Members felt that this would delay the approval of the plan by the Treaty, causing prejudice to the development of scientific research by the originators. Most Members felt that the schedule and the pathway of such proposals within the CCAMLR system should be strictly followed.

The importance of Marine Protected Areas (MPAs) was stressed. It was suggested that case studies should be developed and reviewed for different types of MPAs, inter alia, areas within EEZs, areas adjoining or linking existing EEZ MPAs, areas surrounding islands or archipelagos of exceptional marine biodiversity, large scale areas of unique characteristics, and seamount and canyon habitats with unique or highly diverse assemblages.

There was felt the need of organising a workshop on Marine Protected Areas. There was support from many Members to further developments on this matter. The terms of reference for such a workshop are: to review current principles and practices related to the establishment of Marine Protected Areas; to discuss how the use of Marine Protected Areas could be used to contribute to

furthering the objectives of CCAMLR; to consider proposals that are currently under development or in a conceptual phase that relate to Marine Protected Areas in the Convention Area; and to discuss the types of scientific information that may be required for the development of Marine Protected Areas to further the objectives of CCAMLR, including the identification of biophysical regions across the Convention Area.

SCAR is planning a workshop on Protection in the 21st century, possibly for 2005 and CCAMLR is planning a workshop on Marine Protected Areas, also for 2005. It would be important that a communication is established between Dr. D. Walton that is coordinating this workshop in SCAR and Dr. P. Penhale that is coordinating the workshop in CCAMLR. It would be excellent to have representatives of SCAR at the CCAMLR workshop and of CCAMLR at the SCAR workshop on this topic, even if we consider that both have different purposes and limitations for their proposals.

I have reported on a discussion that happened in SCAR-LSSSG on the interaction SCAR, Treaty and CCAMLR when it comes to ASMA or ASPA plans that include a marine area. This has been discussed at CCAMLR for years also, and seems not to be clear to all Members. The problem comes mainly from the fact that different ministries are involved with the Treaty and with CCAMLR, and that they often don't talk to each other. There is also the problem of the timing of the submission of the proposals to CCAMLR. This topic will probably be dealt with again in future meetings, and be an agenda topic for a future workshop on protected areas organised by CCAMLR.

Small Scale Management Units for Krill Fishery Management

Options for subdividing krill catch limits among SSMUs will be evaluated on a workshop on Management Procedures that will take place in 2005.

Some members noted that the krill fishery in area 48 is declining and that the allocation of precautionary catch limit of krill by SSMUs is not urgent.

Plausible Ecosystem Models for testing Approaches to Krill Management

A workshop that took place in 2004 has discussed how to build Ecosystem Models and what parameters to consider in a krill centred system.

The general attributes requires of an marine ecosystem model include the incorporation of fishing effects, specification of observations and monitoring programs, flexibility in the degree of aggregation possible among taxonomic groups, use of multiple spatial and temporal scales, flexibility in how interactions between components are simulated, and incorporation of external conditions and processes.

Conceptual models were developed for components such as the physical environment, the primary production, pelagic herbivores and invertebrate carnivores, harvested species such as icefish and krill, mesopelagic species, marine mammals, birds, and fisheries.

In continuation, in 2005 there will be a workshop on Management Procedures to explore management options using spatially structured krill population models that allow exploration of the interaction between the krill population, spatial catch limits and the fishery, krill predators and transport of krill. In 2006 a workshop will consider CEMP in the context of an operating model of the Antarctic ecosystem.

HARVESTED SPECIES

The following CCAMLR Members fished: Argentina, Australia, Chile, France, Japan, New Zealand, Norway, Poland, Republic of Korea, Russian Federation, South Africa, Spain, Ukraine, UK, USA and Uruguay. In addition, Vanuatu fished for krill.

Members have reported (based on data submitted to CCAMLR by 24 September) a total of 87 133 tonnes of krill, 13 307 tonnes of toothfish and 2 737 tonnes of icefish from the Convention Area. A number of other species have been taken as by-catch.

Krill

The krill fishery under the Conservation Measures in force, in the 2003/04 season, was conducted in Area 48 (Atlantic sector). Members have reported 87 133 tonnes of *Euphausia superba*, and a non-Member, Vanuatu, caught 14 979 tonnes, raising the total krill catch to 102 112 tonnes (against 117 728 tonnes in 2002/03).

The Vanuatu-flagged vessel used a pumping system, what is not covered by conservation measures of CCAMLR. There seems to be a tendency for krill being fished by vessels from a larger number of Member and non-Member nations and the use of different fishing techniques, resulting in greater uncertainty in long-term predictions of krill catches.

Toothfish

A total of 13 307 tonnes of *Dissostichus* spp. were taken in the Convention Area during the 2003/04 season, compared with 18 507 tonnes in the previous season. Data reported in the CDS indicated that 10 043 tonnes of *Dissostichus* spp. was taken outside the Convention Area in 2003/04. There was a sharp decrease in estimates of overall IUU catch.

There were multidisciplinary research surveys undertaken by the USA and by New Zealand, and random stratified bottom trawl surveys by Australia and by the UK.

Tagging studies are required for all new and exploratory toothfish fisheries, and continued work on biological and population parameters, important for assessment process, are encouraged.

Progress has been made on assessment methods by WG-FSA-SAM. Assessed fisheries are reported including details of the fishery, stocks and areas, parameter estimation, stock assessment, fish and invertebrate by-catch, bird and marine mammal by-catch, ecosystem implications/effects, and harvest controls.

Icefish

A total of 2 737 tonnes of *C. gunnari* were taken in the Convention Area during the 2002/03 season, compared with 4 498 tonnes in the previous season.

Bottom trawl surveys seem to underestimate the abundance of *C. gunnari*, due to all age classes spending time in midwater and therefore not being sampled by the bottom trawl. Approaches to the use of combined estimates of biomass from trawl and acoustic surveys should be encouraged. The impact of bottom trawling on the benthic habitats and its efficiency in bird by-catch mitigation should be taken into consideration, and more data are required.

Other Finfish Species

The fishery for *Electrona carlsbergi* in Sub area 48.3 remained closed until sufficient information is obtained to revise the assessment. No surveys have been conducted and no new information is available.

Fish and Invertebrates by-catch

Progress towards assessing the long-term status of by-catch species associated with longline and trawl fisheries was made. However, insufficient biological information was available for rajids (skates and rays) and no assessments could be currently undertaken for these taxa. For macrourids

(rattails or grenadiers), there were sufficient biological data available, indicating that these species have relatively low productivity and may be vulnerable to overexploitation. The development of avoidance and mitigation measures for by-catch species should be given high priority.

There were initial studies to estimate the survivorship of skates and rays in the catch-release process, but further studies on skate survivorship are needed. Macrourids and rajids were identified as priority by-catch taxa for which assessments of status are required.

The possibility of producing risk assessments for fish and invertebrate by-catch species in a similar way to the assessment of seabirds was considered. Members are encouraged to collate information to allow risk categorisation for major by-catch species in the CCAMLR Convention area.

The development of avoidance and mitigation measures for by-catch species should be given high priority.

Crabs and Squids

No fishery for stone crabs and for squid was carried out in the 2003/04 season and no proposals to harvest stone crabs or squids were received for the 2004/05 season.

INCIDENTAL MORTALITY

Assessment and Avoidance of Incidental Mortality during Antarctic Fishing Operations

The levels of seabird by-catch in the Convention Area (58 seabirds) had been slightly higher than in the previous two years, and significantly lower than in 1997 when 6 589 seabirds were reported killed, and when CCAMLR started to implement conservation measures to address the problem.

At the French EEZ (Kerguelen and Crozet islands) there was an intersessional effort to revise fishing practices and conduct mitigation experiments, that reduced in 73% the number of birds that were reported killed (4 008 birds).

Assessment of incidental mortality of seabirds during IUU longline fishing

IUU activities were lower during the 2004 season and therefore a reduction of 30% in the by-catch of birds (5 311 birds) was observed (95% confidence interval 4 352 to 14 166 birds).

There is the need of more reports on research into the status and distribution of seabirds at risk, and new data on remote-recorded at-sea distributions of albatrosses and petrels have been requested from BirdLife International. A comprehensive survey in 2003/04 of all colonies of black-browed, grey-headed and wandering albatrosses throughout South Georgia indicated continuing declines for all species.

In trawling operations there were also seabirds and seals as by-catch and there is a need to discuss and implement mitigation measures. Progress was made with national and international initiatives involving ACAP, FAO and NPOA-Seabirds outside the Convention Area.

ADDITIONAL MONITORING AND MANAGEMENT ISSUES

Marine Debris

Marine debris and its impact on marine mammals and seabirds are monitored in the Convention Area. Members have conducted marine debris programs in accordance with CCAMLR standard methods at 11 sites, all within the Atlantic sector of the Convention Area. These data entered into the marine debris database. Marine mammal entanglements and presence of debris in seabird colonies have decreased and the number of seabirds contaminated with hydrocarbons remained low.

There were reports from the status of marine birds and mammals populations in the Convention Area, and it was agreed that a general review of this topic should occur every five years. The last review of bird populations occurred in 2000 and of marine mammals in 2001. It was suggested that the relevant expert groups of SCAR be requested to provide a review of the current status and trends of these populations in the Convention Area.

There has been a tradition of reporting on data coming from the SCAR Birds, Seals and APIS groups to CCAMLR, every five years. This year one Member raised the question about the value of such data, as they apparently do not contain all information that is needed for CCAMLR, and if these SCAR groups could incorporate some of the requests of CCAMLR when collecting and processing such data. The question remained open for further discussion. Other members stressed that these data are of great value and should continue to be made accessible to CCAMLR. I pointed out that these groups would next meet in 2006.

Information on trends may arise from information on distribution and abundance of predators, ecosystem modelling considerations reflecting the marine biodiversity of the Convention Area, and assessments of the impacts of incidental mortality on bird populations. This probably involves considerable work and the need of refinement of the requirements either by WG-EMM or relevant SCAR experts within such a limited time span. The Scientific Committee tasked a correspondence group on land-based predators to develop and/or refine CCAMLR's requirements, in consultation with the Convener of WG-EMM and liaise with the SCAR representative to the Scientific Committee.

At this time I was mentioned to make this liaison. However, taking into consideration that now I am the Chair of the Scientific Committee, and also that by coincidence SCAR no longer wants me to be their representative, a new name has to be suggested soon by SCAR in order to allow the fulfilment of this requirement by CCAMLR..

MANAGEMENT UNDER CONDITIONS OF UNCERTAINTY ABOUT STOCK SIZE AND SUSTAINABLE YIELD

There was an apparent decline of catches of *Dissostichus* spp outside the Convention Area. This can be due to overfishing or to migration patterns and changes in spawning grounds.

It was also noticed that some fisheries are taking juveniles over the deeper slope areas and adults from depths down to 3 000 m. All data on *D. eleginoides* collected by CCAMLR members outside the Convention Area should be submitted to the Secretariat. Trends in catch rates could assist in revealing to what extent these stocks are affected by fishing and how they may interact with fish inside the Convention Area. Harmonisation of management of the fisheries inside and outside the Convention Area may assist the conservation of the stocks. More tagging initiatives are also recommended for fisheries in and outside the Convention Area.

As there is always doubt on the nature and identity of stocks in and outside the Convention Area, and need of more scientific information, there could be an involvement of SCAR Evoluta to help clarifying this, through a coordinated sampling action.

COOPERATION WITH OTHER ORGANISATIONS

The Cooperation with the Antarctic Treaty System includes reporting about the CEP and SCAR activities.

SCAR is always included in a different agenda item than the other organisations, because it deals specifically with Antarctic Science. Notice also that not all SCAR Members are CCAMLR Members and vice versa. Often different Ministries are involved with CCAMLR and with SCAR, and the scientists belong to different institutions, and very often don't know each other, and the institutions don't talk to each other. Only in a few countries the same scientists act in both, SCAR and CCAMLR.

I have presented the SCAR report including: the presentation of a summary of the long-term strategic Plan and activities planned for the IPY, the topics that were discussed at the LSSSG meeting in Bremen, the Science Plans of LSSSG, the activities of the Expert Groups and of the Action Groups, the planning for the IPY, the announcement of the IX SCAR International Biology Symposium, and the establishment of a SCAR/SCOR/IOC Coordinating Group.

SCAR was invited to send an Observer to the next meeting. His/her name has to be communicated officially to the CCAMLR Secretariat.

PUBLICATIONS

In addition to annual reports of CCAMLR, the Commission noted that the following documents were published in 2004:

CCAMLR Scientific Abstracts, covering abstracts of papers presented in 2003

CCAMLR Science, Volume 11

Statistical Bulletin, Volume 16

Revisions to *Inspectors Manual* and *Scientific Observers Manual*.

MEETINGS IN 2005

WG-EMM – Tokyo area, Japan, two weeks between 27 June and 22 July;

WG-FSA, including WG-IMAF – Hobart, Australia, from 10 October to 21 October;

WG-FSA-SAM – Tokyo area, Japan, scheduled for the week immediately prior to WG-EMM;

Workshop on age determination of *C. gunnari* – dates and venue to be determined;

SG-ASAM (Acoustic Survey Analysis Methods) – dates and venue to be determined;

Workshop on Marine Protected Areas - dates and venue to be determined

Scientific Committee and Commission – Hobart, Australia, from 24 October to 4 November

Final personal remarks: Biologists of National Antarctic Programs, represented at the SCAR Life Sciences Standing Scientific Committee (LSSSG) on one hand, and biologists that are inserted in Governmental programs that aim to provide the best available scientific information to CCAMLR on the other, are both doing research on Antarctic marine organisms. Even taking into consideration that the aims of both are different, both would gain if a greater integration would happen between the Scientific Committee of CCAMLR and the SCAR-LSSSG.

This could be concretely initiated on the occasion of the activities related to the International Polar Year, when coordinated marine surveys and harmonised data collection could be developed. CCAMLR has submitted a Plan of Intentions to the IPY Office. It has the intention to concentrate efforts at the Atlantic sector of the Convention Area, carrying out a krill survey, and the collection of data on dependent and related species, and on the physical environment.

CCAMLR Biologists were also invited to participate on the IX SCAR Biology Symposium that will be held in Curitiba, Brazil, in July 2005. Information on the website of the Symposium is available at the CCAMLR site. This will also increase the awareness of both, SCAR and CCAMLR scientists of research activities, and, possibly, facilitate collaborative work.

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