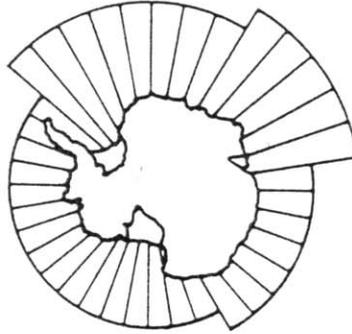


CCAMLR-IX

COMMISSION FOR THE CONSERVATION OF
ANTARCTIC MARINE LIVING RESOURCES



REPORT OF THE NINTH MEETING
OF THE COMMISSION

HOBART, AUSTRALIA
22 OCTOBER - 2 NOVEMBER, 1990

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Chairman of the Commission
November 1990

This document is produced in the official languages of the Commission: English, French, Russian and Spanish.
Copies are available on request to the CCAMLR Secretariat at the above address.

Abstract

This document presents the adopted record of the Ninth Meeting of the Commission for the Conservation of Antarctic Marine Living Resources held in Hobart, Australia from 22 October to 2 November 1990. Major topics discussed at this Meeting include: assessment and avoidance of incidental mortality of Antarctic marine living resources, review of the report of the Scientific Committee, review of existing Conservation Measures and adoption of new Conservation Measures, current operation of the System of Inspection, compliance with Conservation Measures in force, development of a conservation strategy for Antarctic marine living resources, and cooperation with other international organisations including the Antarctic Treaty System. The reports of the Standing Committee on Administration and Finance, the Working Group for the Development of Approaches to Conservation of Antarctic Marine Living Resources and the Standing Committee on Observation and Inspection are appended.

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REPORT OF THE NINTH MEETING OF THE COMMISSION

OPENING OF THE MEETING

1.1* The Ninth Meeting of the Commission for the Conservation of Antarctic Marine Living Resources was held in Hobart, Tasmania, Australia from 22 October to 2 November 1990 under the Chairmanship of Ambassador M.H.C. Côrtes (Brazil).

1.2 All Members of the Commission were represented: Argentina, Australia, Belgium, Brazil, Chile, European Economic Community, France, Germany, India, Italy, Japan, Republic of Korea, New Zealand, Norway, Poland, South Africa, Spain, Sweden, Union of Soviet Socialist Republics, United Kingdom of Great Britain and Northern Ireland and United States of America.

1.3 Following established practice, acceding states were invited to attend as observers and Finland, the Netherlands and Uruguay attended in this capacity.

1.4 The Food and Agricultural Organisation of the United Nations (FAO), the Intergovernmental Oceanographic Commission (IOC), the International Union for the Conservation of Nature and Natural Resources (IUCN), the International Whaling Commission (IWC), the Scientific Committee on Antarctic Research (SCAR), the Scientific Committee on Oceanic Research (SCOR) and the Antarctic and Southern Ocean Coalition (ASOC) were invited to attend the Meeting as observers. IWC, SCAR and ASOC attended.

1.5 A list of Participants is at Annex 1. A List of Documents presented to the Meeting is at Annex 2.

1.6 The Ninth Annual Meeting of the Commission was opened by His Excellency General Sir Phillip Bennett, AC, KBE, DSO, Governor of Tasmania.

1.7 In his opening address, His Excellency particularly emphasised the resource management responsibility of CCAMLR, drawing attention to the fact that it was still the only component of the Antarctic Treaty System with such a responsibility. Its success, therefore, in this area was of fundamental importance in convincing the world that the Treaty System was the only appropriate vehicle at present through which the region can be administered.

* The first part of the number relates to the appropriate item of the Agenda (Annex 3).

1.8 His Excellency also urged Members to do what they could in their respective countries to achieve a better public appreciation of the work of CCAMLR.

ORGANISATION OF THE MEETING

2.1 The Agenda was adopted after adding an additional sub-item to Item 3, 'Proposed Amendment to Staff Regulation 5.3' of the Provisional Agenda distributed prior to the Meeting (Annex 3).

2.2 The Commission noted that, since its last meeting, Sweden and Italy had become Members, the Netherlands had acceded to the Convention and the German Democratic Republic had acceded to the Federal Republic of Germany, who now wished to be referred to in the Commission as Germany. Sweden and Italy made opening statements to the Commission.

2.3 The Chairman welcomed participants and observers and reported on intersessional activities. He drew attention to the proposal in January by the UK to impose a catch limit for *Dissostichus eleginoides* following an increase in the level of fishing effort being applied in the longline fishery for this species. The proposal was put to Members for decision by correspondence in accordance with Rule of Procedure 4 (a), but as consensus had not been reached, the proposal had not been adopted. He also reported on actions taken to implement the CCAMLR Inspection System since the last meeting, and mentioned the meetings of CCAMLR Working Groups held during the intersessional period. He advised Members of the death earlier in the year of Dr John Gulland FRS, who had been active participant in the work of CCAMLR for many years.

2.4 In the absence of Dr K. Vamvakas (EEC), Dr J. Heap (UK) acted as Chairman of the Standing Committee on Administration and Finance (SCAF), and in the absence of Mr J. Bravo de Laguna (Spain), the Vice Chairman, Mr J. Burgess (Australia), presided over the work of the Standing Committee on Observation and Inspection (SCOI).

2.5 The Commission assigned Agenda Item 3 to SCAF, Item 7 to the Working Group for the Development of Approaches to Conservation of Antarctic Marine Living Resources (WG-DAC) and items 11 and 12 to SCOI.

2.6 Having assigned these tasks to subsidiary bodies, the Chairman adjourned the Meeting of the Commission until Monday, 29 October 1990.

FINANCE AND ADMINISTRATION

3.1 The following items of the Commission's Agenda were referred to SCAF for consideration:

- (i) Examination of Audited Financial statements for 1989;
- (ii) Appointment of Auditor;
- (iii) Review of Budget for 1990;
- (iv) Draft Budget for 1991 and Forecast Budget for 1992;
- (v) Review of Formula for Calculating Members' Contributions; and
- (vi) Proposed Amendments to Staff Regulation 5.3

3.2 The Commission received the Executive Secretary's report of the meeting of SCAF (Annex 4) and took note of the discussions of items not requiring decisions.

Examination of the Audited Financial Statements for 1989

3.3 The Commission accepted the Financial Statements for 1989.

Appointment of Auditor

3.4 The Commission agreed to appoint the Australian Auditor-General as the Commission's External Auditor for a further two-year term.

Review of Budget for 1990

3.5 The Commission noted the forecast results of income and expenditure for 1990. It was agreed that Members should make every effort to pay their contributions as close as possible to the due date (1 January), and in any case before the deadline, 31 May. To facilitate prompt payment a number of delegations advised that they propose to make their contributions ahead of the due date based on the estimate provided at the Meeting. It was agreed that any adjustment to their contribution would be made at a later date pending the actual outcome of income and expenditure items of 1990.

Draft Budget for 1991 and Forecast Budget for 1992

3.6 The Commission noted the changes to the draft Budget presented in CCAMLR-IX/5 resulting from discussions in SCAF, in particular the publications item and recommendations of the Scientific Committee. The Commission approved the budget for 1991 as contained in the report of the SCAF meeting (Annex 4).

3.7 The Commission noted the 1992 Budget Forecast and the assumed rate of inflation of 6.5% per annum.

3.8 The Commission requested that the Secretariat continue to provide information on the budget rate of growth as illustrated in paragraph 17 of the Executive Secretary's report of SCAF.

Review of Formula for Calculating Members' Contributions

3.9 In accordance with the decision taken in 1987, the Commission reviewed the formula for calculating Members' Contributions. It was agreed to continue with the current formula for a further three years after which time the formula should be reviewed.

3.10 The formula is:

- (i) those countries engaged in harvesting in the Convention Area will, in respect of the amount harvested, contribute at the rate of 1.5% of total Members' contributions per 100 000 tonnes of finfish and 0.75% of total Members' contributions per 100 000 tonnes of krill;
- (ii) the amount harvested shall be calculated as the average catch over a three-year reporting period, ending at least 12 months prior to the Commission meeting at which the budget in question is approved;
- (iii) the balance of total contributions will be equally shared amongst all Members of the Commission;
- (iv) the first 9 000 tonnes or 5% of the catch of individual harvesting countries, whichever is the greater, will not be taken into account for the purpose of

calculating their contributions to the budget. The application of this exemption is to be calculated on the basis of the proportion of fish and krill in the total catch of each country;

- (v) the maximum percentage of total contributions to be paid in respect of the amount harvested shall be fixed at 50%; and
- (vi) the maximum percentage of total contributions to be met by any individual harvesting country is fixed at 25%.

Proposed Amendment to Staff Regulation 5.3

3.11 The Commission agreed that Staff Regulation 5.3 should be changed in accordance with the suggestions made by SCAF and in particular that the amendment should not apply to staff members who have been in receipt of the Grant under the existing regulation.

3.12 It was agreed by the Commission that Staff Regulation 5.3 should now read as follows:

‘The type of allowances available to staff members in the professional category shall, in principle, be those allowances in force in the United Nations. The scale of allowances shall be established in US dollars according to the corresponding scales of allowances which would apply to officials of the United Nations Secretariat in Australia and shall be paid in Australian dollars. However, education allowances for each dependent child shall not be paid:

- (a) in respect of children of Australian staff members;
- (b) in respect of attendance at an Australian public (State) school;
- (c) for attendance at a University in Australia;
- (d) for correspondence courses or private tuition;
- (e) when schooling does not require regular attendance at an education institution;

- (f) in respect of education expenses covered from scholarship grants or subsidies from other sources.’

Chairman of SCAF

3.13 The Chairman thanked Drs Vamvakas and Heap who chaired the meetings of SCAF for the Eighth and Ninth Meetings of the Commission, respectively. The USA was elected to take over as Chairman for the next two years until the conclusion of the Commission’s meeting in 1992.

IX Special Consultative Meeting of the Antarctic Treaty

3.14 The Commission considered document CCAMLR-IX/19 in the light of its decision that the Executive Secretary should represent or advise the Chairman at future meetings of the Antarctic Treaty Consultative Parties, to which CCAMLR is invited as an observer.

3.15 The Commission agreed that funding for travel in 1990 should be made available from any savings in the 1990 budget items. If necessary, funding could be provided from the income items; Interest, New Members’ Contributions or Staff Assessment Levy. The UK Delegation noted that the effect of approving the travel costs in this manner was to increase Members’ 1991 Contributions.

REPORT OF THE SCIENTIFIC COMMITTEE

4.1 The Chairman of the Scientific Committee, Dr I. Everson (UK), presented the Report of the Ninth Meeting of the Scientific Committee. The majority of the work of the Scientific Committee in 1989/90 had flowed from decisions of the last meeting. Questions raised by the Commission had been addressed by the three specialist working groups of the Scientific Committee and the Scientific Committee’s responses are contained in the relevant sections of its report.

4.2 Dr Everson informed the Commission of deep concern expressed by Members of the Scientific Committee regarding decisions taken by the Commission at the last meeting based on anecdotal evidence which was contrary to the advice provided by the Scientific Committee.

4.3 Dr Everson said that he regretted to have to report that once again the provision of advice to the Commission had been hampered because insufficient data were available. The requirements to

submit various data, agreed by the Commission, were not being fully complied with and there were serious questions about the quality of some of the data that had been submitted.

4.4 The Commission's attention was drawn to references throughout the report to uncertainty in the advice being proffered by the Scientific Committee and the need to take account of this uncertainty in making decisions on the management of the living resources in the CCAMLR Convention Area. In connection with this, Dr Everson drew Members' attention to Appendix D of the Report of the Working Group on Fish Stock Assessment (SC-CAMLR-IX, Annex 5) entitled 'Can We Improve Management Advice for CCAMLR Fish Stocks - Living with Uncertainty'.

4.5 Many delegations expressed their concern at the persistent problem of Members not meeting their obligations concerning the submission of data, particularly in relation to finfish. One delegation pointed out that in implementing the Convention, the Commission had not achieved results commensurate with the level of effort and resources that had been applied both directly through CCAMLR activities and in national research programs in support of CCAMLR.

4.6 Several Members stated that in the face of the lack of data and the consequent uncertainty in the scientific advice there was no alternative but to act conservatively in adopting conservation measures.

4.7 In response to these statements the USSR Delegation acknowledged that the USSR had not been meeting its obligations to submit all data required on its fishing activities. They said there were problems particularly with the submission of fine-scale data from the commercial fishery, but were confident these would be overcome and that the required data would be submitted correctly. They informed the Commission that the Soviet Union had two to three research vessels operating in the CCAMLR Convention Area every year and that data from their activities were submitted to CCAMLR.

4.8 New Zealand, supported by Chile, noted that the report of the Scientific Committee contained numerous references to the need for scientific observers. They suggested that bilateral arrangements could be made in the coming year for scientific observers to be placed on commercial and research fishing vessels, prior to the further elaboration of a scientific observer system at the next meeting of the Commission.

Krill Resources

4.9 The Commission noted that the krill catch in 1989/90 was 5% lower than that in 1988/89 totalling 374 793 tonnes, that Statistical Area 48 (South Atlantic) continued to be the dominant

fishing area and that the largest catch had been taken in Subarea 48.2 whereas in the previous year Subarea 48.3 had yielded the largest catch.

4.10 In response to inquiries, the USSR Delegation informed the Commission that their catch of krill had remained relatively constant over the past five years.

4.11 At present 50 to 60% of the catch was processed for human consumption and the rest went into production of krill meal for animal feed and aquaculture. The objective of the Soviet industry is ultimately for almost all of the catch to go to human consumption.

4.12 In working towards this objective, the USSR is modernising its fleet and installing new processing equipment onboard which minimises pollution of the area. It is their intention to maintain the catch at around current levels for the next few years.

4.13 The Delegation of Japan said that half of the Japanese catch was for direct human consumption and half for aquaculture and other uses.

Management of the Krill Fishery

4.14 The Commission noted the comments in the Scientific Committee's report concerning the management of the krill fishery. It was acknowledged that at the present time and for the foreseeable future, it is highly unlikely that methods will be available to enable the Scientific Committee to provide advice on the status of krill stocks or the impact of the krill fishery on those stocks.

4.15 Several delegations stated that in this situation it would be unwise to continue to take no action with regard to regulating the krill fishery and that precautionary measures should be introduced at this Meeting.

4.16 One delegation thought that this approach was too cautious, that there is no doubt that there is an abundance of krill in Antarctic waters. Regulatory measures are unnecessary at this stage and effort should be concentrated on intensive cooperative research to improve our understanding of krill and its abundance and distribution.

4.17 The Commission noted the four general concepts for management suggested by the Scientific Committee in accordance with Article II of the Convention:

- (i) aim to keep the krill biomass at a higher level than might be the case if only single species harvesting considerations were of concern;
- (ii) given that krill dynamics have a stochastic component, focus on the lowest biomass that might occur over a future period, rather than the mean biomass at the end of that period as might be the case in a single species context;
- (iii) ensure that any reduction of food to predators which may arise because of krill harvesting is not such that land breeding predators with restricted foraging ranges are disproportionately affected in comparison with predators in pelagic habitats; and
- (iv) examine what level of krill escapement would be sufficient to meet the reasonable requirement of krill predators.

4.18 It was felt that these were a useful basis from which to start to develop a management policy for krill.

4.19 The Commission noted the work undertaken by the Scientific Committee on the incidental catch of larval and juvenile fish in the krill fishery and endorsed in principle the Scientific Committee's recommendations that once nursery grounds for fish had been identified, these areas should be closed to krill fishing for the relevant periods (SC-CAMLR-IX, paragraph 3.11).

4.20 The Commission agreed that the Working Group on Krill (WG-Krill) should meet in 1991 and was pleased to accept an offer from the Delegation of the USSR to host the meeting in the Soviet Union in late July.

Fish Resources

4.21 The total catch of finfish in the Convention Area in 1989/90 was 47 727 tonnes, which included a catch of 23 623 tonnes of the myctophid *Electrona carlsbergi*. The other major species caught were *Champsocephalus gunnari*, which yielded 12 528 tonnes in Subarea 48.2 and 8 087 tonnes in Subarea 48.3, and *D. eleginoides* (8 309 tonnes in Subarea 48.3).

4.22 The myctophid fishery was concentrated in Subarea 48.3 and the majority of catches were taken between August and November 1989. The fishery for *D. eleginoides* in Subarea 48.3 was performed using longlines, and had maximum catches between October and December 1989.

4.23 A Conservation Measure (13/VIII) was in place limiting the catch of *C. gunnari* in Subarea 48.3 to 8 000 tonnes and prohibiting fishing prior to 15 January 1990. Following this date, catches were reported to the Secretariat on a five-day reporting system, and the fishery was closed on 5 March. The total commercial catch was 7 848 tonnes and 239 tonnes were taken during research cruises around South Georgia and Shag Rocks.

4.24 A Conservation Measure (16/VIII) was in force limiting the catch of *Patagonotothen brevicauda guntheri* to 12 000 tonnes in Subarea 48.3. The total catch of this species was 145 tonnes. The Scientific Committee had been informed that this was because of limitations due to the 12 mile limit around Shag Rocks during the season.

4.25 It was suggested that management of this fishery would be assisted if the Commission was informed of the uses to which the catch was being put.

4.26 The Delegation of the USSR informed the Commission that all of the Soviet catch of finfish, except for the catch of *E. carlsbergi*, was processed for human consumption. The waste after processing was turned into fish meal for animal feed. The *E. carlsbergi* fishery was still in the developmental stage and research on possible processing of this species for human consumption was being undertaken.

4.27 It was agreed that the fishery on *E. carlsbergi* is a developing fishery and there is a need to characterise and estimate the potential yield of this fishery as a matter of urgency. In order to do this, the Commission agreed that the following information be submitted to the Secretariat:

- full details of the proposed fishing operation including method of fishing, mesh sizes in use, proposed target region and any indication of the minimum catch levels required to develop a viable fishery for *E. carlsbergi*;
- details of the species' stock size, abundance and demography (e.g., growth parameters and size/age at annual maturity); and
- details of the predators dependent on this resource and their requirements.

4.28 These details would enable the Scientific Committee to compile:

- a description of the ecological consequences of harvesting this particular species, particularly insofar as it may constitute a food resource for associated predator species; and

- a review of similar fisheries for related species which may give an indication of the effects of harvesting this species on the core or related components of the Antarctic marine ecosystem.

4.29 The Commission expressed concern that repeated requests by the Scientific Committee for data on *Pleuragramma antarcticum* in Division 58.4.2 had not been satisfied. It agreed that since *P. antarcticum* is a prey species of interest to CEMP, all fine-scale data on the species should be submitted.

4.30 It was agreed that a meeting of the Working Group on Fish Stock Assessment (WG-FSA) would be necessary before the next meeting of the Scientific Committee. A meeting of the WG-FSA will be held in Hobart from 8 to 18 October 1991.

Squid Resources

4.31 Although no Members undertook squid fishing in the Convention Area in the last year, so as to be prepared for the development of such a fishery, the Commission adopted the instructions and data reporting presented in SC-CAMLR-IX/BG/4 as the standard format for reporting fine-scale catch and effort data.

Ecosystem Monitoring and Management

4.32 The Commission noted the excellent progress made with the implementation of the predator monitoring aspects of the CCAMLR Ecosystem Monitoring Program (CEMP). It also noted that the monitoring of krill for determining its availability to predators is directly related to the broader issue of estimating krill abundance and distribution. The Scientific Committee has provided guidance for concentrating effort on the problem of krill monitoring, but at present no definitive methods are available.

4.33 The Commission noted that the preparation of protocols for the submission of data on predator monitoring had been completed and Members now had an obligation to report these data to CCAMLR. It was agreed that these data should be submitted by 30 June each year.

4.34 The Commission endorsed the Scientific Committee's approaches to the integration of data from CEMP into CCAMLR management strategies:

- (i) to determine annually the magnitude, direction and significance of year-to-year and overall trends in each of the predator parameters being monitored at each site;
- (ii) to evaluate annually these data on species, site and region specific bases;
- (iii) to consider the conclusions in the light of a comprehensive range of relevant biological information;
- (iv) to formulate, where appropriate, advice to the Scientific Committee; and
- (v) the conclusion that analysis and evaluation of submitted CEMP data and developments of recommendations based thereon did not require, and should not await, the determination of the precise quantitative nature of predator/prey/ environmental relationships.

4.35 The Commission approved the publication of a brochure for distribution to scientists and scientific institutions describing CEMP and including background on its development and its aims.

4.36 The Commission welcomed the initial progress that had been made in response to its request that Members synthesise data on predator population size, foraging areas, diet, and energy budgets in order to provide estimates of krill requirements of predators in the CEMP Integrated Study Regions. It was agreed that it would be desirable for Working Group for the CCAMLR Ecosystem Monitoring Program (WG-CEMP) to continue analysis and evaluation of this issue. Members were requested to collect and make available relevant data and to develop proposals for a workshop designed to provide specific detailed responses to the Commission's request.

4.37 The Commission endorsed the recommendation of the Scientific Committee that an intersessional meeting of WG-CEMP should be held in 1991 and accepted an offer from the Spanish Delegation to host the meeting in Spain in early August.

4.38 Recognising the importance of CEMP to the work of the Commission and noting that in

recent years WG-CEMP has not had the benefit of participation from a number of nations undertaking research of direct relevance to CEMP, Members were encouraged to become more active in the work of CEMP.

Data Collection and Reporting

4.39 The existing requirements for data reporting are given in Annex 5.

4.40 The Commission expressed concern that the Scientific Committee did not have access to sufficient data on many subjects where this data should have been available, and that this seriously affected the ability of the Scientific Committee to provide good scientific advice on some topics (CCAMLR-IX, paragraph 4.3).

4.41 The following data requirements recommended by the Scientific Committee were endorsed by the Commission:

- (i) haul-by-haul data on krill catches should be reported from areas within 10 km of land based predator colonies where possible (SC-CAMLR-IX, paragraph 2.63);
- (ii) scientific observers should be encouraged to collect data on krill demographic parameters from the fishery on the form developed by the WG-Krill (SC-CAMLR-IX, paragraph 2.64);
- (iii) fine-scale data should continue to be reported from Subareas 48.1, 48.3 and all Integrated Study Regions (SC-CAMLR-IX, paragraph 2.65);
- (iv) length frequency data from the krill fishery already collected and being collected at present should be analysed to estimate the level of precision to be expected for implementation of the current sampling regime (SC-CAMLR-IX, paragraph 2.68). Collection of current data should follow the interim measure requiring collection of at least 50 krill per haul, per vessel, per day (SC-CAMLR-IX, paragraph 2.67);
- (v) data on the by-catch of young and larval fish in the krill fishery should be submitted on the form developed and distributed by the Secretariat (as shown in SC-CAMLR-IX, Annex 5, Appendix J), when possible (SC-CAMLR-IX, paragraphs 3.16 and 3.17). This data should be submitted to CCAMLR.

- (vi) all data listed in Appendix I of the WG-FSA report (SC-CAMLR-IX, Annex 6) should be submitted as soon as possible to CCAMLR. In particular, Members should ensure that this data is of high quality and is submitted in a timely fashion;
- (vii) data from the longline fishery for *D. eleginoides* should be reported in haul-by-haul format on Form C2 amended as detailed in paragraph 7.14 of SC-CAMLR-IX and as requested in paragraph 52 of CCAMLR-VIII. This data should include details of incidental mortality occurring in the longline fishery;
- (viii) fine-scale catch and effort data from squid jig fisheries should be reported to CCAMLR using the reporting form in SC-CAMLR-IX/BG/4 (SC-CAMLR-IX, paragraph 4.11);
- (ix) data from the predator monitoring program of CEMP should be submitted by the deadline of 30 June (SC-CAMLR-IX, paragraph 5.15). Data on finfish and krill should be submitted by the deadline of 30 September; and
- (x) data on fine-scale catches of *P. antarcticum* in Subarea 58.4 particularly in 1985 and 1986, and on the role of *E. carlsbergi* in the Antarctic ecosystem should be supplied to CEMP (SC-CAMLR-IX, paragraph 5.20).

CCAMLR/IWC Workshop on the Feeding Ecology of Southern Baleen Whales

4.42 The IWC has suggested that the original objectives for the Workshop be expanded to include all major predators of krill. The IWC has included the Workshop in its financial planning for 1992. The Commission noted the Scientific Committee's views that the original terms of reference were still appropriate to CCAMLR interests, agreed that the Executive Secretary should write to the IWC in these terms and endorsed the idea of a review of CCAMLR interests in 1992.

Marine Mammal and Bird Populations

4.43 The Commission expressed its gratitude to the SCAR Group of Specialists on Seals and the SCAR Bird Biology Subcommittee for their advice relating to the status of marine mammal and bird populations, and for assistance in compiling data on population sizes, diet and energy budgets in connection with CEMP. The Secretariat was asked to provide assistance to the Groups, especially in specifying desired reporting formats, so as to facilitate their work on the review of status and

trends in these populations. The Commission is looking forward to receiving the report of this work in 1992.

4.44 The Commission endorsed the Scientific Committee's recommendation that Members, wherever possible during their icebreaker operations in Antarctica, conduct censuses of seals in pack ice areas and report the results to CCAMLR.

Proposed Workshop on Southern Elephant Seals

4.45 The Commission agreed to support the convening of a workshop to assess the current status of southern elephant seals and to collect additional information which might help to identify the factors causing the decline in their abundance in some regions.

ASSESSMENT AND AVOIDANCE OF INCIDENTAL MORTALITY

Reports of Members

5.1 The Commission, in considering this item, had reports from Australia, Japan, the Republic of Korea, the USSR, the United Kingdom and the United States describing steps that had been taken to assess and to avoid mortality of Antarctic Marine Living Resources caused by entanglement in and ingestion of persistent marine debris of human origin and by accidental catch during commercial fishing operations.

Marine Debris

5.2 The Commission, considering the report of the Scientific Committee, noted that the UK intended to continue with beach surveys at South Georgia and encouraged Members to introduce the methods applied at South Georgia to other areas.

Longline Fishery

5.3 Recollecting the discussions concerning incidental mortality of seabirds in longline fisheries which led to the adoption of Resolution 5/VII (CCAMLR-VIII, paragraphs 24 and 107), noting the

papers submitted by Australia (CCAMLR-IX/14 Rev. 1 and CCAMLR-IX/BG/17), noting particularly the advice of the Scientific Committee (SC-CAMLR-IX, paragraph 7.14), the Commission agreed that the conduct of longline fisheries should be regulated so as to minimise incidental mortality of seabirds.

5.4 The Commission, therefore, agreed to adopt the recommendation of the Scientific Committee in respect of the longline fishery in the Convention Area (SC-CAMLR-IX, paragraph 7.14):

- (i) that information on incidental mortality specified in paragraph 52, CCAMLR-VIII be reported. (This is now included in Conservation Measure 26/IX);
- (ii) that the data required to determine the best method of reducing the incidental mortality of seabirds be provided, viz:
 - position on ship of deployment of longline and branchlines (side, stern or stern quarter);
 - length of branchlines;
 - number of branchlines (= number of hooks);
 - weight of branchlines and placement of weights on main line;
 - average weight of bait;
 - average ship's speed during setting;
 - time of start of set and end of set (local time);
- (iii) that until such time as the data required under (i) and (ii) above are provided and evaluated, the following modifications to longline fishing techniques be implemented:
 - the deployment on all longline vessels of a 'tori' pole and streamer line (as specified in CCAMLR-IX/BG/14, Rev. 1);
 - the requirement that the fishing operation be conducted in such a way that the baits sink immediately they are in the water;
 - the setting of longlines only at night;
 - the prohibition of dumping trash or offal while longline operations are in progress; and
- (iv) steps should be taken to place scientific observers on longline vessels.

5.5 Some Members felt that the measures in paragraph 5.4 (iii) above would benefit from further development and implementation in the form of a conservation measure. A draft Conservation Measure (Annex 6) was proposed but some Members felt that the technical detail of these additional measures required further consideration by national experts. Other delegations felt that the additional measures should be implemented as soon as possible.

5.6 The Commission agreed that Members would investigate the use of and, where possible, apply the additional measures contained in the draft Conservation Measure. It was also agreed that the formal adoption of the Conservation Measure would be discussed again at the next meeting of the Commission.

5.7 Regarding paragraph 5.4 (iv) above, the Delegation of the USSR extended an invitation to Members for observers to come aboard Soviet longline vessels to observe fishing techniques and to monitor any incidental mortality which may occur.

Driftnet Fishery

5.8 In accordance with Rule 13 of the Commission's Rules of Procedure the Chairman invited the representative of ASOC to address the Commission. The representative drew the Commission's attention to two recent studies on the incidental mortality associated with driftnet operations. These studies, one in the Tasman Sea and one in the North Pacific, indicated that there was a significant mortality of sharks, marine mammals, marine turtles and birds in these fisheries.

5.9 Several delegations drew the attention of the meeting to large-scale unregulated driftnet fisheries in marine areas adjacent to the CCAMLR Convention Area, possibly by non-members, and expressed concern over the effects of these fisheries on Antarctic marine resources, as well as to the threat to the marine ecosystem posed by lost or abandoned nets. These nets may cause mortality on marine organisms and contribute to the accumulation of debris at sea.

5.10 Some delegations stressed that driftnetting threatened the marine environment both within and beyond the limits of national jurisdiction and should therefore be addressed by CCAMLR in a global context.

5.11 The United States presented a proposal calling for a ban on the use of driftnets in the Convention Area (CCAMLR-IX/13). It was pointed out that large-scale pelagic driftnet fisheries indiscriminately catch large numbers of marine mammals, sea birds and other non-target species, including commercially valuable fish species (SC-CAMLR-IX/BG/8).

5.12 The Commission noted that the UN General Assembly had recently passed a resolution (UNGA 44/225) which recommends, *inter alia*, that expansion of large-scale driftnet fisheries should be prohibited until such time as there is statistically reliable evidence that driftnet fishing would not have unacceptable impacts.

5.13 The Delegation of Japan drew the attention of the Commission to the fact that the moratorium established by the UN Resolution would take effect from 30 June, 1992 and was subject to review pending scientific investigation. This delegation understood that there was no possibility of any driftnetting being initiated in the Convention Area under this moratorium.

5.14 The Scientific Committee on Antarctic Research (SCAR) reviewed the issue of driftnet fishing at its last meeting in Brazil in July 1990 and adopted a resolution calling upon the Commission to ban driftnets in the Convention Area. Reviewing these actions, and recognising that at present there are no driftnet fisheries in the Convention Area, the Scientific Committee expressed the understanding that the introduction of driftnet fisheries is prohibited (SC-CAMLR-IX, paragraph 7.22).

5.15 The Commission adopted Resolution 7/IX, which declared that, in accordance with UNGA Resolution 44/225, there will be no expansion of large-scale pelagic driftnet fishing into the Convention Area.

5.16 In this regard, it was also agreed, in accordance with Article X, that the Commission would draw the Resolution to the attention of any State that is not a Party to the Convention, whose nationals or vessels engage in large-scale pelagic driftnet fishing.

RESOLUTION 7/IX

Driftnet Fishing in the Convention Area

1. The Commission endorsed the goals of the UN General Assembly Resolution 44/225 on large-scale pelagic driftnet fishing, which calls, *inter alia*, for a cessation of any further expansion of large scale pelagic driftnet fishing on the high seas. Recognising the concentration of marine living resources present in Antarctic waters, it was noted

that large-scale pelagic driftnet fishing can be a highly indiscriminate and wasteful fishing method that is widely considered to threaten the effective conservation of living marine resources. Although no Member is currently engaged in large-scale pelagic driftnet fishing in the Convention Area, the Commission expressed concern about the potential impact on marine living resources if large-scale pelagic driftnetting were to expand into the Convention Area.

2. To this end, the Commission agreed, in accordance with UN Resolution 44/225, that there will be no expansion of large-scale pelagic driftnet fishing into the Convention Area.
3. It was agreed that, in accordance with Article X, the Commission would draw this Resolution to the attention of any State that is not a Party to the Convention and whose nationals or vessels engage in large-scale pelagic driftnet fishing.

PROTECTION OF CEMP MONITORING SITES

6.1 In the intersessional period the Executive Secretary, in accordance with the Commission's direction (CCAMLR-VIII, paragraph 61), had prepared and distributed for comment, a paper on the designation and protection of monitoring sites in CEMP. Further discussion of this matter was referred to an *ad hoc* group under the Convenership of Dr J. Bengtson (USA) and a report was presented to the Commission.

6.2 In considering Conservation Measure 18/IX, the Commission noted that the prohibition contained in paragraph 10 might require some Members to legislate to give effect to it within their domestic jurisdiction. In this connection, the Commission expressed its strong desire to see this Conservation Measure enter into force as soon as possible and requested any Member who foresaw the probability of delay, arising from the need to complete necessary constitutional procedures, to inform the Executive Secretary accordingly.

6.3 It was also noted that three proposals for protecting CEMP sites had been drafted using provisional guidelines (SC-CAMLR-VII, paragraph 5.19 and 5.20) and submitted to WG-CEMP and the Scientific Committee for review. These proposals pertained to CEMP sites at Prydz Bay, Cape Shirreff and Seal Islands (SC-CAMLR-IX/6, Corrigendum). It was agreed that these proposals should be redrafted and brought forward for consideration in accordance with the procedures specified in Conservation Measure 18/IX.

6.4 Conservation Measure 18/IX was adopted.

CONSERVATION MEASURE 18/IX
Procedure for According Protection to CEMP Sites

6.5 The Commission,

Bearing in mind that the Working Group for the CCAMLR Ecosystem Monitoring Program (WG-CEMP) has established a system of sites contributing data to the CCAMLR Ecosystem Monitoring Program (CEMP), and that additions may be made to this systems in the future;

Recalling that it is not the purpose of the protection accorded to CEMP sites to restrict fishing activity in adjacent waters;

Recognising that studies being undertaken at CEMP sites may be vulnerable to accidental or wilful interference;

Concerned, therefore, to provide protection for CEMP sites, scientific investigations and the Antarctic marine living resources therein, in cases where a Member or Members of the Commission conducting or planning to conduct CEMP studies believes such protection to be desirable;

hereby adopts the following Conservation Measure in accordance with Article IX of the Convention:

1. In cases where a Member or Members of the Commission conducting, or planning to conduct, CEMP studies at a CEMP site believe it desirable that protection should be accorded to the site, it, or they, shall prepare a draft management plan in accordance with Annex A to this Conservation Measure;
2. Each such draft management plan shall be sent to the Executive Secretary for transmission to all Members of the Commission for their consideration at least three months before its consideration by the WG-CEMP;
3. The draft management plan shall be considered in turn by the WG-CEMP, the Scientific Committee and the Commission. In consultation with the Member or Members of the Commission which drew up the draft management plan, it may be

amended by any of these bodies. If a draft management plan is amended by either the WG-CEMP or the Scientific Committee, it shall be passed on in its amended form either to the Scientific Committee or to the Commission as the case may be;

4. If, following completion of the procedures outlined in paragraphs 1 to 3 above, the Commission considers it appropriate to accord the desired protection to the CEMP site, the Commission shall adopt a Resolution calling on Members to comply, on a voluntary basis, with the provision of the draft management plan, pending the conclusion of action in accordance with paragraphs 5 to 8 below;
5. The Executive Secretary shall communicate such a Resolution to SCAR, the Antarctic Treaty Consultative Parties and, if appropriate, the Contracting Parties to other components of the Antarctic Treaty System which are in force;
6. Unless, before the opening date of the next regular meeting of the Commission, the Executive Secretary has received:
 - (i) an indication from an Antarctic Treaty Consultative Party that it desires the resolution to be considered at a Consultative Meeting; or
 - (ii) an objection from any other quarter referred to in paragraph 5 above;

the Commission may, by means of a conservation measure, confirm its adoption of the management plan for the CEMP site and shall include the management plan in Annex B to Conservation Measure 18/IX;

7. In the event that an Antarctic Treaty Consultative Party has indicated its desire for the resolution to be considered at a Consultative Meeting, the Commission shall await the outcome of such consideration, and may then proceed accordingly;
8. If objection is received in accordance with paragraphs 6 (ii) or 7 above, the Commission may institute such consultations as it may deem appropriate to achieve the necessary protection and to avoid interference with the achievement of the principles and purposes of, and measures approved under, the Antarctic Treaty and other components of the Antarctic Treaty System which are in force;

9. The management plan of any site may be amended by decision of the Commission. In such cases full account shall be taken of the advice of the Scientific Committee. Any amendment which increases the area of the site or adds to categories or types of activities that would jeopardise the objectives of the site shall be subject to the procedures set out in paragraphs 5 to 8 above;
10. Entry into a CEMP site included in Annex B shall be prohibited except for the purposes authorised in the relevant management plan for the site and in accordance with a permit issued under paragraph 11;
11. Each Contracting Party shall, as appropriate, issue permits authorising its nationals to carry out activities consistent with the provisions of the management plans for CEMP sites and shall take such other measures, within its competence, as may be necessary to ensure that its nationals comply with the management plans for such sites;
12. Copies of such permits shall be sent to the Executive Secretary as soon as practical after they are issued. Each year the Executive Secretary shall provide the Commission and the Scientific Committee with a brief description of the permits that have been issued by the Parties. In cases where permits are issued for purposes not directly related to the conduct of CEMP studies at the site in question, the Executive Secretary shall forward a copy of the permit to the Member or Members of the Commission conducting CEMP studies at that site; and
13. Each management plan shall be reviewed every five years by the WG-CEMP and the Scientific Committee to determine whether it requires revision and whether continued protection is necessary. The Commission may then act accordingly.

CONSERVATION MEASURE 18/IX: ANNEX A

INFORMATION TO BE INCLUDED IN MANAGEMENT PLANS FOR CEMP SITES

Management plans shall include:

A. GEOGRAPHICAL INFORMATION

1. A description of the site, and any buffer zone within the site, including:

- (a) geographical coordinates;
- (b) natural features;
- (c) boundary markers;
- (d) natural features that define the site;
- (e) access points (pedestrian, vehicular, airborne, sea-borne);
- (f) pedestrian and vehicular routes in the site;
- (g) preferred anchorages;
- (h) location of structures within the site;
- (i) areas or zones within the site, described in generic or geographical terms, or both, in which activities are prohibited or otherwise constrained;
- (j) location of nearby scientific stations, research or refuge facilities; and
- (k) location of areas or sites, in or near the site, which have been accorded protection status in accordance with measures adopted under the Antarctic Treaty or other components of the Antarctic Treaty System which are in force.

2. Maps showing:

- (a) the location of the site in relation to major surrounding features; and
- (b) where applicable, the geographical features listed in paragraph 1 above.

B. BIOLOGICAL FEATURES

1. A description of the biological features of the site, in both space and time, which it is the purpose of the management plan to protect.

C. CEMP STUDIES

1. A full description of the CEMP studies being conducted or planned to be conducted, including the species and parameters which are being or are to be studied.

D. PROTECTION MEASURES

1. STATEMENTS OF PROHIBITED ACTIVITIES:

- (a) throughout the site at all times of the year;
- (b) throughout the site at defined parts of the year;
- (c) in parts of the site at all times of the year; and
- (d) in parts of the site at defined parts of the year.

2. Prohibitions regarding access to and movement within or over the site.

3. Prohibitions regarding:

- (a) the installation, modification, and/or removal of structures; and
- (b) the disposal of waste.

4. Prohibitions for the purpose of ensuring that activity in the site does not prejudice the purposes for which protection status has been accorded to areas or sites, in or near the site, under the Antarctic Treaty or other components of the Antarctic Treaty System which are in force.

E. COMMUNICATIONS INFORMATION

1. The name, address, telephone, telex and facsimile numbers of:

- (a) the organisation or organisations responsible for appointing national representative(s) to the Commission; and
- (b) the national organisation or organisations conducting CEMP studies at the site.

Notes:

1. A code of conduct. If it would help towards achieving the scientific objectives of the site, a code of conduct may be annexed to the management plan. Such a code should be written in hortatory rather than mandatory terms, and must be consistent with the prohibitions contained in Section D above.
2. Members of the Commission preparing draft management plans for submission in accordance with this Conservation Measure should bear in mind that the primary purpose of the management plan is to provide for the protection of CEMP studies at the site through the application of the prohibitions contained in Section D. To that end, the management plan is to be drafted in concise and unambiguous terms. Information which is intended to help scientists, or others, appreciate broader considerations regarding the site (e.g., historical and bibliographic information) should not be included in the management plan but may be annexed to it.

DEVELOPMENT OF APPROACHES TO CONSERVATION

7.1 The Convenor of the Commission's Working Group for the Development of Approaches to Conservation of Antarctic Marine Living Resources (WG-DAC), Australia, presented the Working Group's report which is included in Annex 7. The Commission's attention was also drawn to the discussion by the Scientific Committee under the same agenda item (SC-CAMLR-IX, paragraphs 8.1 to 8.16), which elaborates on some of the questions related to this work posed to it by the Commission.

7.2 The determination of catch levels for allowing the restoration of depleted populations, usually by-catch species, was a feature of the work in both the Working Group (Annex 7, paragraphs 4 to 5) and Scientific Committee (SC-CAMLR-IX, paragraphs 8.8 to 8.14). This work illustrated, in principle, how these catch limits could be calculated such that they have specified levels of probability of achieving the requisite stock recovery according to the requirements in Article II, taking into account the levels of uncertainty in stock assessments.

7.3 As a result of this work, the Commission noted that setting catch limits according to a fishing mortality at $F_{0.1}$ is not appropriate for depleted stocks.

7.4 The Commission agreed that this approach should be developed further by the Scientific Committee as a means for providing an objective basis for determining by-catch limits for depleted stocks. According to Article II, paragraph 3 (a), the target level for recovery of depleted stocks is

one that is 'close to that which ensures the greatest net annual increment'. The Commission recognised that for the above approach to be refined an operational procedure for determining the level of 'greatest net annual increment' needs to be developed. Similarly, an operational definition for the words 'close to' will also be required.

7.5 The Commission also noted that such an approach, with modifications, may be useful for taking into account uncertainty when calculating fishing mortalities appropriate for exploitable stocks at all levels of development.

7.6 The Working Group also considered what constitutes the 'best scientific evidence available' that Article IX.1 (f) of the Convention requires to be used as the basis for formulating Conservation Measures (Annex 7, paragraphs 6 to 9). The Commission endorsed the view that it should regard the Scientific Committee as the source of the best scientific evidence available.

7.7 The Commission agreed that scientific evidence used as the basis for management decisions should be submitted in a timely fashion to the Scientific Committee for consideration and formulation of advice. It was noted that the Commission is still obliged to make management decisions when the Scientific Committee has insufficient information to formulate advice. The Commission endorsed the principle that the absence of essential data should be taken into account when determining catch limits: in the absence of data, very conservative catch limits should be set.

7.8 The Chairman of the Scientific Committee, Dr Everson, indicated that in order for the Scientific Committee to review Conservation Measures it would be useful for the Commission to give full attribution to any scientific evidence not arising from the Scientific Committee's report that it has been used in formulating Conservation Measures.

7.9 The Commission agreed that full and prompt submission of data by Members as required under Article XX is essential for its efficient operation.

7.10 The Working Group's report reiterated the need for information on Members' plans for fishery development and descriptions of operational tactics applied to fishing activities. It was stressed that this information is important:

- (i) for the formulation of approaches to conservation of fisheries at all stages of their development; and
- (ii) for the setting of priorities in the Commission's work.

7.11 The Chairman and Members commended Australia for its energy and tenacity in initiating the work undertaken by WG-DAC. It was acknowledged that the subject matter of this Working Group is complex, but it was clear that good progress had been made and the Working Group had made a valuable contribution to the work of the Commission. Many issues that had originated in the Working Group's discussions were now finding their way into the discussions on management in the Commission's meetings.

CONSIDERATION OF THE IMPLICATIONS OF POSSIBLE LIMITS ON KRILL CATCHES IN SUBAREA 48.3

8.1 In 1989, the Commission asked three questions of the Scientific Committee, concerning the biomass and potential yield of krill in Subarea 48.3 and the actions necessary to protect predators dependent on krill and young fish caught as by-catch in the krill fishery. If the Scientific Committee was unable to answer these questions it was requested to give an indication of the time period required to provide answers (CCAMLR-VIII, paragraph 50).

8.2 The Scientific Committee was unable to provide adequate answers to these questions due to uncertainties in methodologies and data, and recommended that in the light of these uncertainties the Commission should consider imposing precautionary measures for limiting the krill fishery in Subarea 48.3 (SC-CAMLR-IX, paragraph 2.76).

8.3 At the time the report of the Scientific Committee was being adopted, the Delegations of Japan and USSR expressed the view that the introduction of precautionary limits on krill fishing in Subarea 48.3 was not yet justified because of the lack of estimates of the total biomass and the potential yield.

8.4 The EEC, supported by other Members, expressed the view that a precautionary limit on krill catches would be an appropriate response to the Scientific Committee's recommendation. In principle, such a limit could be extended to include areas in addition to Subarea 48.3 and it was agreed that the questions asked of the Scientific Committee in respect of Subarea 48.3 should also be asked in respect of Subareas 48.1 and 48.2 and Statistical Areas 48, 54 and 88 as a whole.

8.5 Furthermore, the Scientific Committee should be specifically asked for an indication of its best estimate of a precautionary limit for krill in the various statistical areas. It should also be asked to identify the various options for the basis on which such a precautionary limit could be established.

8.6 Several Members explained that the proposed management procedures associated with

precautionary limits to fishing would act to prevent unregulated escalation of the fishery, and would not be designed to limit the current activities of fishing Members, or to restrict the activities of fleets to specific areas. One possible management measure along these lines would involve the establishment of an initial catch limit in excess of present catches and permit expansion of the fishery at a controlled rate (for example 5% a year). The limit would remain unchanged following years in which it was not exceeded. This management procedure would be reviewed as improved scientific advice became available.

8.7 The USSR, Japan and Korea stated their view that they were not in principle opposed to the idea of a precautionary limit on krill fishing, but that any quantitative basis for such a precautionary limit on fishing should have scientific justification based on assessments performed by the Scientific Committee.

8.8 Other delegations indicated their view that the setting of a precautionary limit in the absence of scientific advice, based on assessments, was a natural and well established method in other international fishery organisations (e.g., NAFO) to limit uncontrolled expansion of a fishery. Indeed a central reason for the need for a precautionary limit on the krill fishery was the acknowledged inability of the Scientific Committee to give quantitative advice on the biomass and potential yield of krill.

8.9 In any event the USSR, Japan and Korea considered that such precautionary measures were unnecessary because the fishery had remained at approximately the same level since 1986. In this regard, both the USSR and Japanese Delegations stated that they anticipated no increase in the total catches of krill in the Convention Area in the near future.

8.10 In this connection, the Commission:

- (i) takes note of the intention of all Members presently fishing for krill in the Convention Area not to increase significantly their fishing effort for krill or the catches of krill within the Convention Area in the near future.
- (ii) urges any Member intending to increase significantly its fishing effort or catches of krill from the Convention Area to notify the Commission at least four months in advance of the next Commission meeting; and

- (iii) urges any Member at present not conducting fishing for krill in the Convention Area but intending to initiate fishing for krill in the Convention Area, to notify the Commission at least four months in advance of the next Commission meeting.

8.11 The EEC expressed strong regret that the Commission had not followed the advice of the Scientific Committee in fixing a precautionary limit for krill in Subarea 48.3.

8.12 Australia, New Zealand and other delegations expressed strong disappointment that the Commission had been unable to reach consensus on a conservation measure to put a precautionary limit on the krill fishery. Krill was by far the largest fishery in the Convention Area and its development had been a key factor prompting the negotiating of the Convention. It was therefore a matter of deep concern that in its nine annual meetings since the Commission commenced operation, it had not been possible to secure the cooperation of the major fishing Members for the adoption of any measure directed at the conservation of krill.

8.13 The Delegation of the USSR, in response, noted that the issue of establishing conservation measures on krill was formally raised for the first time at the Eighth Meeting of the Commission and was included on the Agenda for the first time at the Ninth Meeting of the Commission.

UNEXPLOITED AND UNDER-EXPLOITED FISHERY RESOURCES

9.1 The Commission considered the Scientific Committee's response to the questions on new fisheries that had been posed at the 1989 Meeting (CCAMLR-VIII, paragraph 123) after the issue had been raised by WG-DAC (CCAMLR-VIII, Annex E). The Scientific Committee's response is to be found in paragraph 3.102 of its report (SC-CAMLR-IX) and paragraphs 282 to 294 of Annex 5 of its report.

9.2 The Commission noted that the Scientific Committee recommended that the approach to new and developing fisheries suggested by WG-FSA should be taken into account in the management of those fisheries (SC-CAMLR-IX, paragraph 8.7).

9.3 The Commission agreed with the principle that the development of a new fishery should be directly linked with the process of elaborating scientific advice and management in respect of the fishery. This is to ensure that such development does not outpace the ability of the Commission to achieve the objectives of Article II.

9.4 The Scientific Committee had listed information (SC-CAMLR-IX, Annex 5, paragraph 289)

that would be important for assessing the potential yield of a new fishery. This information should be considered before a new fishery begins to develop so that the Commission can be satisfied that the development of the fishery will proceed in accordance with the objectives in Article II.

9.5 It was emphasised that the development of measures directed at informing the Commission of the intention to conduct a fishery in the Convention Area was of importance in assisting the Commission in implementing Articles II and IX of the Convention.

9.6 The Swedish Delegation put forward a proposal for a measure that would require Members who intended developing new fisheries in the Convention Area to notify the Commission in advance of a new fishery being started in order for the Scientific Committee and the Commission to consider the matter prior to the fishery's inception.

9.7 All delegations welcomed a measure of this kind as being necessary for the work of the Commission. However, reservations were expressed by some delegations concerning the legal implications of the measure, and appropriate definitions of new and developing fisheries.

9.8 The Commission agreed that during the intersessional period, until this issue has been considered at its 1991 Meeting, Members should conform to the basic idea of advance notification of any new fishery.

9.9 It was agreed that the Commission should consider a conservation measure aimed at new and developing fisheries at its meeting in 1991. In the meantime, the Executive Secretary was requested to contact Members and management organisations concerning appropriate definitions of 'new and developing fisheries' and prepare a working document for the next meeting of the Commission.

9.10 Chile emphasised that an important component of the Scientific Committee's advice to the Commission on a new fishery is the specification of the data required for the formulation of future advice. They also drew attention to the importance of obtaining full fisheries and scientific information during the development of a new fishery. In this regard, the Commission agreed that it is particularly important that Members promptly fulfil their obligation under Article XX to provide statistical, biological and other information.

ACQUISITION OF FISHERIES DATA FROM NON-MEMBER COUNTRIES

10.1 Acting on advice from the Scientific Committee concerning the necessity to obtain information of fishing operations of non-member countries that might fish in the Convention Area, the

Commission agreed that the Executive Secretary should firstly determine under which flag vessels operate and endeavour to establish contact with the appropriate authority in view of the operator's flag.

10.2 It was further agreed that the Executive Secretary would be able to rely on assistance from Members who had administrative relationships with such operators found to be active in the CCAMLR Convention Area.

10.3 It was emphasised that the attention of such operators should be drawn to the objectives of the Convention and the Conservation Measures adopted by the Commission to give effect to those Measures with the aim of having them conduct their activities in accordance with CCAMLR requirements.

OBSERVATION AND INSPECTION

11.1 In the absence of the Chairman, Mr Bravo de Laguna, the Vice Chairman who had presided over the work of SCOI, Mr Burgess, presented the report of the Committee (Annex 8).

11.2 The Commission accepted the report of the Committee and noted that at the request of the Representative of Japan, the meeting had been conducted under Commission Rule of Procedure 32 (b), which restricted the meeting to Commission Members only.

11.3 The Commission noted with satisfaction that the first inspection under the System of Inspection had been reported. The Commission further noted that the USSR had reported 118 inspection of its own vessels by soviet inspectors operating under the USSR national inspection system and that future inspections of Soviet vessels by Soviet inspectors undertaken in accordance with the CCAMLR System of Inspection will be reported using the agreed reporting forms.

11.4 The Commission agreed that Reports of Inspection should be made available only to the nominated contact of contracting parties, in accordance with the provisions of principles VIII and IX of the System of Observation and Inspection.

11.5 The Commission endorsed the recommendation of the Committee that the Dictionary of Questions and Terms included in the Inspectors Manual, be enlarged by including all four Commission languages, the Japanese language translations made available at the meeting, and other translations by fishing nations as they become available to the CCAMLR Secretariat.

11.6 The Commission also endorsed the view of the Committee that further experience of inspections should be obtained before the Committee embarked on a full scale evaluation of the inspection system and that in the short term, the Committee should give priority to development of a system of scientific observation.

11.7 The Commission agreed that the success of an observation system would depend on cooperation between the observer and the vessel crew and that this would depend on separation of the roles of inspector and observer.

11.8 The Commission noted the obligation set down in Article XXIV of the Convention and expressed satisfaction with the declared willingness of Members to cooperate in the development of a CCAMLR system of scientific observation.

11.9 The Commission endorsed the Committee's view that:

- (i) the essential purpose of the observation system would be the gathering and validation of scientific data; and
- (ii) the elaboration of a multilateral system should take account of the fact the extensive bilateral cooperation would be required in arranging placements of observers.

11.10 The Commission directed the CCAMLR Secretariat to produce a draft paper on scientific observation for circulation to Members for comment in the intercessional period.

COMPLIANCE WITH CONSERVATION MEASURES IN FORCE

12.1 The Commission noted that the USSR had reported a violation by a USSR vessel of CCAMLR Conservation Measure 2/III and that appropriate action had been taken under Soviet law.

12.2 It further noted that Members were required under Article XXI (2) of the Convention to submit information on measures taken to ensure compliance with the provisions of the Convention. The Commission was informed that the EEC had enacted into its legislation, in accordance with its obligations under CCAMLR, the Conservation Measures adopted by the Commission at CCAMLR-VIII. In view of the transfer of competence of Member States to the Community in regard to fisheries, this legislation fulfilled the obligations of those Member States of the Community which are Members of CCAMLR, with regard to compliance with Conservation Measures.

CONSERVATION MEASURES

13.1 The Commission agreed that Conservation Measures 3/IV, 4/V and 7/V should remain in force as they stand.

13.2 Conservation measures 13/VIII, 14/VIII, 15/VIII, 16/VIII and 17/VIII had all lapsed at the end of the 1989/90 season.

13.3 Conservation 2/III remained in force but was reviewed in the light of new information.

Mesh Size

13.4 The Commission recollected the advice of the Scientific Committee last year on the topic of mesh selection (SC-CAMLR-VIII, paragraph 3.18) and noted their additional advice this year in respect of *C. gunnari* in Subarea 48.3.

13.5 Members agreed that it was no longer appropriate to retain the use of 80 mm mesh nets in the directed fishery for *C. gunnari* in Subarea 48.3.

13.6 Some delegations, including the European Community, felt the scientific advice indicated that the minimum permitted mesh size should be 100 mm.

13.7 Other delegations believed that a minimum permitted mesh size of 90 mm was entirely consistent with the scientific advice provided.

13.8 In either case it was recognised that it would be necessary to delay implementation of this Conservation Measure until fishing nations had had time to make the necessary changes. It was agreed, however, that the new regulations should be in force as from 1 November 1991.

13.9 The Commission adopted Conservation Measure 19/IX and amended Conservation Measure 2/III by deleting the reference to *C. gunnari*.

13.10 In conformity with the provision contained in the statement of the Chairman of the Conference on the Conservation of Antarctic Marine Living Resources in 1980, the French Delegation informed the Commission that, for the time being, the waters adjacent to Kerguelen and Crozet Islands should be excluded from the area of application of Conservation Measure 19/IX.

13.11 For the fish resources, Members reviewed the advice of the Scientific Committee on a stock by stock basis.

Chamsocephalus gunnari in Subarea 48.3

13.12 The Scientific Committee had noted the difficulty experienced by the WG-FSA in arriving at recommendations for the management of the *C. gunnari* fishery. Three alternative TAC options were suggested: two derived from an analysis of survey results (44 000 to 64 000 tonnes, SC-CAMLR-IX, paragraph 3.37); and the third from consideration of by-catch limitations (14 000 tonnes, SC-CAMLR-IX, paragraph 3.42). The Scientific Committee had recommended that a conservative TAC should be adopted and some delegations expressed the view that the figure of 14 000 tonnes could reflect such a conservative measure.

13.13 The EEC proposed a TAC of 14 000 tonnes for this species, a figure supported by a number of other delegations. This limit would, *inter alia*, minimise the by-catch of other protected fish species in Subarea 48.3.

13.14 The USSR Delegation proposed a TAC of 64 000 tonnes as being more consistent with the advice from survey results.

13.15 There was a clear recommendation of the Scientific Committee that a conservative TAC for *C. gunnari* should be set. In the light of this recommendation, the Commission adopted Conservation Measure 20/IX.

13.16 The Commission noted the intentions of the USSR to collect and submit detailed catch data

from one of its vessels operating in the *C. gunnari* fishery in Subarea 48.3 on a haul-by-haul basis. The data will be used by WG-FSA to estimate by-catch rates.

13.17 The Commission adopted by-catch TAC limits for *Notothenia gibberifrons* of 500 tonnes, and *Chaenocephalus aceratus*, *Pseudochaenichthys georgianus*, *Notothenia squamifrons* of 300 tonnes as recommended in paragraphs 3.68, 3.70 and 3.72 of the Scientific Committee's report. It was agreed that these limits should be incorporated into Conservation Measure 20/IX.

13.18 The Commission adopted the recommendation of the WG-FSA (SC-CAMLR-IX, Annex 5, paragraph 274) endorsed by the Scientific Committee, that a closed season between 1 April and 4 November 1991 should be implemented to protect spawning stock.

3.19 Conservation Measure 21/IX was adopted.

13.20 The Commission adopted the recommendation of the Scientific Committee (SC-CAMLR-IX, paragraph 3.98) that, in addition to catch data, the reporting system for this species should include effort data in accordance with the indices specified in the STATLANT B forms (total catch, days and hours fished). It was agreed to incorporate this in Conservation Measure 25/IX.

Patagonotothen brevicauda guntheri in Subarea 48.3

13.21 Last year the Commission, in the absence of specific recommendations, adopted a TAC of 12 000 tonnes, a level reduced from that of the previous year's TAC to allow for lack of adequate management data (CCAMLR-VIII, paragraph 102).

13.22 The reported catch in 1989/90 was only 145 tonnes. It was stated that this was because fishing occurred only outside 12 miles from Shag Rocks (SC-CAMLR-IX, Annex 5, paragraph 142).

13.23 The Scientific Committee had noted that the current management advice was predicated on considerable uncertainty in respect of current biomass, age structure, recent recruitment and demography (SC-CAMLR-IX, paragraph 3.50).

13.24 In addition, previous and current assessments of *P.b. guntheri* had taken at face value the 1987 and 1988 catch data. It now transpires that these data contain substantial erroneous information, relating to catches purporting to be of *P.b. guntheri* from the main South Georgia area, where this species does not occur (SC-CAMLR-IX, paragraph 3.49).

13.25 The above situation had produced a dichotomy of views in the Scientific Committee (SC-CAMLR-IX, paragraph 3.53).

13.26 The Commission, noting particularly the potentially serious consequences of the situation outlined in paragraphs 13.22 and 13.23 above, adopted Conservation Measure 23/IX.

Dissostichus eleginoides in Subarea 48.3

13.27 The Commission last year expressed concern over the development of this longline fishery, noting that it was a new fishery, that catch levels had risen rapidly and that very limited data on it were available (CCAMLR-VIII, paragraphs 52 and 104).

13.28 Most Members had endorsed the advice of the Scientific Committee (SC-CAMLR-VIII, paragraph 3.43), that the best available scientific evidence indicated a TAC of 1 200 tonnes (CCAMLR-VIII, paragraph 105).

13.29 This was challenged by USSR on the basis that this fishery only takes senescent fish (CCAMLR-VIII, paragraph 106), an assertion now known to be incorrect (SC-CAMLR-IX, paragraph 3.56), and no TAC was set.

13.30 Despite the USSR implementing its stated intention (CCAMLR-VIII, paragraph 106) not to increase in 1990 its longline fleet by more than 10 to 15%, the catch had increased by 100% to 8 311 tonnes (SC-CAMLR-IX, paragraph 3.55).

13.31 Despite requests for past and future catch and effort data (CCAMLR-VIII, paragraphs 52 and 109) in 1990, only STATLANT data had been supplied; no fine-scale data, no effort statistics and incomplete biological data had been provided.

13.32 Furthermore, fishing on this species had continued since the end of June 1990. No data were available to the Scientific Committee on these catches but in the August through October period last year, over 2 500 tonnes were taken.

13.33 The Commission recollected that at its Seventh Meeting (CCAMLR-VII, paragraph 96), the Commission agreed that a situation, whereby the level of fishing between the start of a season and the meeting of the Commission could effectively pre-empt the Commission's decisions at that meeting on appropriate TACs, was unacceptable.

13.34 The USSR reported that between 1 July and 15 October 1990 it had caught 1 440 tonnes of *D. eleginoides* in Subarea 48.3.

13.35 Members noted that:

- (i) such a catch is already greater than a TAC which might have been set following the recommendation of the Scientific Committee for a TAC in the lower part of the range of 1 200 to 8 000 tonnes (SC-CAMLR-IX, paragraph 3.58); and
- (ii) such a low catch rate, in comparison with that prevailing last year, suggests that the stock may already be significantly depleted.

13.36 The USSR reiterated its view (SC-CAMLR-IX, paragraph 3.59) that a TAC in the middle of the above range would be appropriate.

13.37 The Commission adopted Conservation Measure 24/IX, in conjunction with systems for reporting catch and effort data (Conservation Measures 25/IX and 26/IX).

13.38 It was noted, however, that the implementation of paragraph 3 of Conservation Measure 24/IX would necessitate transmitting instructions to fishing fleets. This could not be done immediately and a date of 1 December 1990 for the effective implementation of the catch and effort reporting system for 1990/91 was agreed.

Notothenia gibberifrons, *Notothenia squamifrons*, *Chaenocephalus aceratus* and *Pseudochaenichthys georgianus* in Subarea 48.3

13.39 The Commission noted the Scientific Committee endorsement of the recommendation of WG-FSA (SC-CAMLR-IX, Annex 5, paragraph 2.73) that Conservation Measure 14/VIII should be replaced with an identical measure for the 1990/91 season.

13.40 Accordingly, Conservation Measure 22/IX was adopted.

Subareas 48.1 and 48.2

13.41 In respect of fin fisheries in Subareas 48.1 and 48.2, the Commission noted that advice of the Scientific Committee (SC-CAMLR-IX, paragraphs 3.74 to 3.77), recollected the statements made last year (SC-CAMLR-VIII, paragraphs 3.52 and 3.53) and considered the lack of relevant management data (SC-CAMLR-IX, paragraph 3.74) and the resulting substantial uncertainties.

13.42 Accordingly, Conservation Measure 27/IX was adopted.

Subarea 58.4

13.43 In considering Division 58.4.4, the Commission noted the management advice of the Scientific Committee in respect of fisheries for *N. squamifrons* on the Ob and Lena Banks.

13.44 Conservation Measure 28/IX was adopted.

Subarea 58.5

13.45 The Commission endorsed the advice of the Scientific Committee in respect of directed fisheries for *Notothenia rossii*, *N. squamifrons*, *C. gunnari* and *D. eleginoides* in Division 58.5.1.

13.46 In conformity with the opportunity provided by the statement of the Chairman of the Conference on the Conservation of Antarctic Marine Living Resources in 1980, the French Delegation indicated that this advice may not be regarded as pertinent to the waters adjacent to Kerguelen in respect of *N. rossii*, *N. squamifrons*, *C. gunnari* and *D. eleginoides* for Division 58.5.1.

CONSERVATION MEASURE 19/IX

Mesh Size for *Champtocephalus gunnari*

13.47 The Commission hereby adopts the following Conservation Measure in accordance with Article IX of the Convention:

1. The use of pelagic and bottom trawls having the mesh size in any part of a trawl less

than 90 mm is prohibited for any directed fishery for *Champscephalus gunnari*.

2. The mesh size specified above is defined in accordance with the regulations on mesh size measurement, Conservation Measure 4/V.
3. It is prohibited to use any means or device which would obstruct or diminishes the size of the meshes.
4. This Conservation Measure does not apply to fishing conducted for scientific research purposes.
5. This Measure will apply as of 1 November 1991.
6. Conservation Measure 2/III is amended accordingly.

CONSERVATION MEASURE 20/IX

Limitation of the Total Catch of *Champscephalus gunnari*
in Statistical Subarea 48.3 in the 1990/91 Season

13.48 The Commission, in accordance with Conservation Measure 7/V, hereby adopts the following Conservation Measure in accordance with Article IX of the Convention:

1. The total catch of *Champscephalus gunnari* in the 1990/91 season shall not exceed 26 000 tonnes in Statistical Subarea 48.3
2. In Statistical Subarea 48.3, the by-catch of *Notothenia gibberifrons* shall not exceed 500 tonnes and the by-catch of any of the following species: *Notothenia rossii*, *Notothenia squamifrons*, *Chaenocephalus aceratus* and *Pseudochaenichthys georgianus* shall not exceed 300 tonnes.
3. The fishery in Statistical Subarea 48.3 shall close if the by-catch of any of the species named in paragraph 2 above reaches their by-catch limit or if the total catch of *Champscephalus gunnari* reaches 26 000 tonnes, whichever comes first.

4. If, in the course of the directed fishery for *Champscephalus gunnari*, the by-catch of any one haul of any of the species named in paragraph 2 above exceeds 5%, the fishing vessel shall move to another fishing ground within the subarea.
5. The use of bottom trawls in the directed fishery for *Champscephalus gunnari* in Statistical Subarea 48.3 is prohibited.
6. For the purpose of implementing paragraphs 1, 2 and 3 of this Conservation Measure, the Catch Reporting System set out in Conservation Measure 25/IX shall apply in the 1990/91 season.

CONSERVATION MEASURE 21/IX

Closed Seasons in the 1990/91 Season in Statistical Subarea 48.3

13.49 The Commission, in accordance with Conservation Measure 7/V, hereby adopts the following Conservation Measure in accordance with Article IX of the Convention:

Directed fishing on *Champscephalus gunnari* in Statistical Subarea 48.3 between 1 April and 4 November 1991 is prohibited.

CONSERVATION MEASURE 22/IX

Prohibition of Directed Fishery on *Notothenia gibberifrons*, *Chaenocephalus aceratus*, *Pseudochaenichthys georgianus* and *Notothenia squamifrons* in Statistical Subarea 48.3 in the 1990/91 Season

13.50 The Commission, in accordance with Conservation Measure 7/V, hereby adopts the following Conservation Measure in accordance with Article IX of the Convention:

Directed fishing on *Notothenia gibberifrons*, *Chaenocephalus aceratus*, *Pseudochaenichthys georgianus* and *Notothenia squamifrons* in Statistical Subarea 48.3 is prohibited in the 1990/91 season.

CONSERVATION MEASURE 23/IX

Prohibition of Directed fishery on *Patagonotothen breviceauda guntheri* in Statistical Subarea 48.3 for the 1990/91 Season

13.51 The Commission, in accordance with Conservation Measure 7/V, hereby adopts the following Conservation Measure in accordance with Article IX of the Convention:

Directed fishing on *Patagonotothen breviceauda guntheri* in Statistical Subarea 48.3 is prohibited in the 1990/91 season.

CONSERVATION MEASURE 24/IX

Catch Limit on *Dissostichus eleginoides* in Statistical Subarea 48.3 for the 1990/91 Season

13.52 The Commission, in accordance with Conservation Measure 7/V, hereby adopts the following Conservation Measure in accordance with Article IX of the Convention:

1. The total catch of *Dissostichus eleginoides* in Statistical Subarea 48.3 caught in the 1990/91 season shall be limited to 2 500 tonnes.
2. For the purposes of the fishery for *Dissostichus eleginoides* in Statistical Subarea 48.3, the 1990/91 fishing season is defined as the period from 2 November 1990 to the end of the Commission meeting in 1991.
3. For the purpose of implementing this Conservation Measure:
 - (i) the catch reporting system set out in Conservation Measure 25/IX shall apply in the 1990/91 season, commencing on 2 November 1990.
 - (ii) the data reporting system set out in Conservation Measure 26/IX shall apply in the 1990/91 season, commencing on 2 November 1990.

CONSERVATION MEASURE 25/IX

Catch and Effort Reporting System in Statistical Subarea 48.3 in the 1990/91 Season

13.53 The Commission, in accordance with Conservation Measure 7/V, hereby adopts the following Conservation Measure in accordance with Article IX of the Convention:

1. For the purposes of this Catch and Effort Reporting System the calendar month shall be divided into six reporting periods, viz: day 1 to day 5, day 6 to day 10, day 11 to day 15, day 16 to day 20, day 21 to day 25 and day 26 to the last day of the month. These reporting periods are hereinafter referred to as periods A, B, C, D, E and F.
2. At the end of each reporting period, each Contracting Party shall obtain from each of its vessels its total catch and total days and hours fished for that period and shall, by cable or telex, transmit the aggregated catch and days and hours fished for its vessels so as to reach the Executive Secretary not later than the end of the next reporting period.
3. Such reports shall specify the month and reporting period (A, B, C, D, E or F) to which each report refers.
4. Immediately after the deadline has passed for receipt of the reports for each period, the Executive Secretary shall notify all Contracting Parties of the total catch taken during the reporting period, the total aggregate catch for the season to that date, together with an estimate of the date upon which the total allowable catch is likely to be reached for that season. Each estimate shall be based on a projection forward of the average daily catch rate (calculated as the total catch by all contracting parties divided by the number of days in the period) for the most recent period based on the reports received for the period in question, to the point at which the total allowable catch will have been taken.
5. When the Executive Secretary has received reports which show that 80% of the total allowable catch has been taken, the Executive Secretary shall make a final estimate of the date upon which the total allowable catch will be reached. The fishery shall close at the end of the last day of the reporting period within which that date falls.

CONSERVATION MEASURE 26/IX

Effort and Biological Data Reporting System for *Dissostichus eleginoides* in Statistical Subarea 48.3 in the 1990/91 Season

13.54 The Commission, in accordance with Conservation Measure 7/V, hereby adopts the following Conservation measure in accordance with Article IX of the Convention:

1. At the end of each month, each Contracting Party shall obtain from each of its vessels the haul-by-haul data required to complete the CCAMLR fine-scale catch and effort data form for longline fisheries (Form C2, Ver.1). It shall transmit these data to the Executive Secretary not later than the end of the month following.
2. Each month the length composition of a minimum of 500 fish will be measured and the information passed to the Executive Secretary not later than the end of the month following.

CONSERVATION MEASURE 27/IX

Prohibition of Directed Fishing for Finfish in Statistical Subareas 48.1 and 48.2 in the 1990/91 Season

13.55 The Commission hereby adopts the following Conservation Measure in accordance with Article IX of the Convention:

Taking of finfish, other than for scientific research purposes, in Statistical Subareas 48.1 and 48.2 is prohibited in the 1990/91 season.

CONSERVATION MEASURE 28/IX

Limitation of the Total Catch *Notothenia squamifrons* in Statistical Subarea 58.4 in the 1990/91 Season

13.56 The Commission hereby adopts the following Conservation Measure in accordance with Article IX of the Convention:

The total catch of *N. squamifrons* in the 1990/91 season on the Lena Bank and Ob Bank (Statistical Division 58.4.4) shall not exceed 305 tonnes and 267 tonnes respectively.

COOPERATION WITH OTHER ELEMENTS OF THE ANTARCTIC TREATY SYSTEM

14.1 The Scientific Committee was represented at the XXIst Meeting of SCAR held in São Paulo from 9 to 27 July 1990 by Dr J. Croxall (UK) and in accordance with established practice, Dr Croxall was asked to report items of particular interest to the Commission.

14.2 Dr Croxall's full report to the Scientific Committee is presented in SC-CAMLR-IX/BG/18. In his report to the Commission, he drew attention to two recommendations from SCAR to CCAMLR: one calling for a ban on the use of driftnets in the Convention Area; the other, to the placing of observers on the ships of nations engaged in longline fisheries as soon as possible. These recommendations were taken into account in the Scientific Committee's provision of advice to the Commission. The Commission's discussion of these matters is reported in paragraphs 4.41 and 5.3 to 5.7.

14.3 Because the meetings of SCOI were conducted under Rule 32 (b), the SCAR Observer was unable to attend them and elaborate on the advice from SCAR in relation to the need for observers onboard longline fishery vessels.

14.4 Dr Croxall also drew attention to proposals from SCAR to the Antarctic Treaty Consultative Parties for the nomination of Marine Sites of Special Scientific Interest. The Commission endorsed the view of the Scientific Committee that if asked, CCAMLR would have been able to make a significant contribution to SCAR's review of the marine SSSI proposals.

14.5 The Commission's attention was drawn to the Antarctic Science Conference and the related symposia being sponsored by SCAR, which will take place in Bremen in September 1991. The objective of the Conference is to increase public awareness of the importance of Antarctic science.

Antarctic Treaty Consultative Meetings

14.6 At its last meeting, the Commission discussed the need to improve communication among the elements of the Antarctic Treaty System. It noted that at the two meetings of the Consultative Parties in which CCAMLR had been invited to participate as an observer, the head of the delegation of the country providing the Chairman of CCAMLR had acted as the

CCAMLR representative. This level of representation had served to establish an operational link between the two elements of the System and communication between them had shown a noticeable improvement.

14.7 Several delegations expressed the view that in order to improve this link, it was now necessary to consider ways of facilitating detailed exchanges during the Treaty meetings.

14.8 The Commission agreed that this would be achieved if, in future, the attendance of CCAMLR as an observer were to be effected by having the Executive Secretary attend either as the Chairman's representative or as an adviser to the Chairman.

14.9 The Commission agreed that the Executive Secretary should attend to advise the Chairman at the Special Antarctic Treaty Consultative Meeting in Viña del Mar, Chile from 19 November to 6 December 1990.

COOPERATION WITH OTHER ORGANISATIONS

15.1 The United States represented CCAMLR at the 42nd Meeting of the IWC held in the Netherlands from 25 June to 6 July 1990.

15.2 The US Delegation referred Members to the observers report, distributed as CCAMLR-IX/BG/20, and highlighted the following points of special interest to the Commission:

- the IWC had decided by consensus to support the UN Resolution on Driftnet Fishing;
- the Moratorium on Commercial Whaling was reviewed and will remain in force; and
- the IWC reiterated its interest in the Workshop on the Feeding Ecology of Southern Baleen Whales which has been proposed for joint sponsorships by the IWC and CCAMLR. Funds for the Workshop have been provided for in the IWC budget forecast for 1992.

Greenpeace Application for Observer Status

15.3 The Commission considered an application from Greenpeace International for observer status at its meetings.

15.4 Several Members pointed out that Greenpeace is a Member of ASOC and as ASOC was now being invited to attend Commission meetings, Greenpeace was adequately represented.

15.5 Some thought that the Commission should be guided by Article XXIII 3 of the Convention which provides for the Commission to enter into agreement with any organisation whose participation might further the work of the Commission and that in their view, Greenpeace satisfied this requirement.

15.6 One delegation pointed out that there were instances where Greenpeace had acted outside the law in trying to attract attention to its activities and that the Commission should not invite such an organisation to participate in its work.

15.7 The Commission decided not to accept Greenpeace's request for observer status.

15.8 In agreeing to ASOC's participation in its meetings, the Commission had taken account of the fact that ASOC is an umbrella organisation and as such, could represent the views of its members in the Commission.

15.9 It was acknowledged, however, that circumstances may change and that applications from non-governmental organisations will be treated on their merits.

ELECTION OF CHAIRMEN OF THE COMMISSION

16.1 After being nominated by Brazil, seconded by the EEC and supported by Spain and Argentina, Chile was elected by acclamation to serve as Chairman of the Commission until the conclusion of the Commission's meeting in 1992.

NEXT MEETING

17.1 At the Eighth Meeting of the Commission in 1989 Chile offered to host the Tenth Meeting of CCAML. That offer had been conditional on organisational and budgetary considerations.

17.2 The representative of Chile advised that due to a number of other meetings being held in Santiago in late 1991 it would not be possible to host CCAMLR-X.

17.3 The next meeting of the Commission and Scientific Committee will be held in Hobart during the period 21 October to 1 November 1991. Several preparatory meetings will be held on Sunday, 20 October.

OTHER BUSINESS

18.1 There were no matters for discussion under this item.

ADOPTION OF REPORT AND CLOSE OF THE MEETING

19.1 The Commission adopted the Report of its Ninth Meeting and the Chairman closed the Meeting.

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LIST OF MEETING PARTICIPANTS

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– RUSSIAN TEAM	Mr Blair Scruton Ms Natasha Novikova Mrs Galina Pritchard Mr Vasily Smirnov
– SPANISH TEAM	Mr Fernando Cariaga Mrs Imma Hilly Mrs Ana María Castro Mrs Marcia Fernandez

SUPPORT STAFF

Mrs Leanne Bleathman

Mrs Deb Frankcombe

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CCAMLR-IX/MA/13	REPORT OF MEMBER'S ACTIVITIES IN THE CONVENTION AREA IN 1989/90 CHILE available in Spanish only at present
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CCAMLR-IX/MA/15

REPORT OF MEMBER'S ACTIVITIES IN THE
CONVENTION AREA IN 1989/90
ARGENTINA
available in Spanish only

SC-CAMLR-IX/1

PROVISIONAL AGENDA FOR THE NINTH MEETING OF
THE SCIENTIFIC COMMITTEE FOR THE
CONSERVATION OF ANTARCTIC MARINE LIVING
RESOURCES

SC-CAMLR-IX/2

ANNOTATED PROVISIONAL AGENDA FOR THE NINTH
MEETING OF THE SCIENTIFIC COMMITTEE FOR THE
CONSERVATION OF ANTARCTIC MARINE LIVING
RESOURCES

SC-CAMLR-IX/2 Corrigendum

ANNOTATED PROVISIONAL AGENDA FOR THE NINTH
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SC-CAMLR-IX/BG/17	OBSERVERS REPORT FROM THE 1990 MEETING OF THE SCIENTIFIC COMMITTEE OF THE INTERNATIONAL WHALING COMMISSION Observer (W.K. de la Mare, Australia)
SC-CAMLR-IX/BG/18	REPORT OF CCAMLR OBSERVER TO SCAR 1990 Observer (J.P. Croxall, United Kingdom)
SC-CAMLR-IX/BG/19	ELEPHANT SEAL AND CCAMLR, AN HISTORICAL REVIEW Delegation of Argentina
SC-CAMLR-IX/BG/20	TWO RECORDS OF SEABIRD ENTANGLEMENT AT CASEY, ANTARCTICA Delegation of Australia
SC-CAMLR-IX/BG/21	COLLARES PLASTICOS EN LOBOS FINOS ANTARTICOS (OTRA EVIDENCIA DE CONTAMINACION) Delegación de Chile available in Spanish only
SC-CAMLR-IX/BG/21 Rev. 1	COLLARES PLASTICOS EN LOBOS FINOS ANTARTICOS (OTRA EVIDENCIA DE CONTAMINACION) Delegación de Chile available in Spanish only
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AGENDA FOR THE NINTH MEETING OF THE COMMISSION

AGENDA FOR THE NINTH MEETING OF THE COMMISSION

1. Opening of the Meeting
2. Organisation of the Meeting
 - (i) Adoption of the Agenda
 - (ii) Report of the Chairman
3. Finance and Administration
 - (i) Examination of Audited Financial Statements for 1989
 - (ii) Appointment of Auditor
 - (iii) Review of Budget for 1990
 - (iv) Draft Budget for 1991 and Forecast Budget for 1992
 - (v) Review of Formula for Calculating Members' Contributions
 - (vi) Proposed Amendment to Staff Regulation 5.3
4. Report of The Scientific Committee
5. Assessment and Avoidance of Incidental Mortality of Antarctic Marine Living Resources
6. Protection of CEMP Monitoring Sites
7. Development of Approaches to Conservation of Antarctic Marine Living Resources
8. Consideration of the Implications of Possible Limits on Krill Catches in Subarea 48.3
9. Unexploited and Under-Exploited Fishery Resources
10. Acquisition of Fisheries Data from Non-Member Countries
11. Observation and Inspection
 - (i) Reports of Inspections Carried Out in 1989/90
 - (ii) Review of the Operation of the System of Inspection
12. Compliance with Conservation Measures in Force

13. Conservation Measures
 - (i) Review of Existing Measures
 - (ii) Consideration of Additional Requirements
14. Cooperation with Other Elements of the Antarctic Treaty System
15. Cooperation with Other International Organisations
16. Election of Chairman of the Commission
17. Next Meeting
18. Other Business
19. Report of the Ninth Meeting of the Commission
20. Close of the Meeting.

**THE EXECUTIVE SECRETARY'S REPORT ON THE
MEETING OF THE STANDING COMMITTEE ON
ADMINISTRATION AND FINANCE (SCAF)**

**THE EXECUTIVE SECRETARY'S REPORT ON THE
MEETING OF THE STANDING COMMITTEE ON
ADMINISTRATION AND FINANCE (SCAF)**

The Standing Committee on Administration and Finance met on 23 and 25 October 1990 under the Chairmanship of Dr J. Heap (UK) and considered the following items:

- (i) Examination of Audited Financial Statements for 1989;
- (ii) Appointment of Auditor;
- (iii) Review of Budget for 1990;
- (iv) Draft Budget for 1991 and Forecast Budget for 1992;
- (v) Review of formula for calculating Members' Contributions; and
- (vi) Proposed Amendment to Staff Regulation 5.3.

EXAMINATION OF AUDITED FINANCIAL STATEMENTS FOR 1989

2. The Committee had before it document CCAMLR-IX/4 'Examination of the Audited Financial Statements and Appointment of an External Auditor'.

3. The Committee noted the Auditor's report that 'The statements, which are in the form approved by the Commission pursuant to Financial Regulation 10.2., have been prepared in accordance with the policies outlined in Note 1 to the Accounts and conform with International Accounting Standards' and that 'The statements are based on proper accounts and records; the income, expenditure and investment of moneys and the acquisition and disposal of assets by the Commission during the year ending 31 December 1989 have been in accordance with the Regulations.'

4. The Committee noted that there were no qualifications to the Financial Statements by the Auditor and agreed that in accordance with Financial Regulation 12.1, the Commission should signify its acceptance of the Audited Financial Statements.

APPOINTMENT OF AN EXTERNAL AUDITOR

5. Financial Regulation 11.1 requires that the external auditor shall be the Auditor-General or equivalent statutory authority from a Member of the Commission and shall serve for a term of two years with the possibility of re-appointment.
6. The Auditor-General for Australia has served the Commission for the past eight years and has indicated that he is available for re-appointment. The Committee supported his re-appointment.

REVIEW OF BUDGET FOR 1990

7. The Administration/Finance Officer introduced document CCAMLR-IX/5, explained the likely outcome of the 1990 Budget and informed the Committee that no expenditures were expected to exceed the approved appropriations.
8. The Committee noted that contributions to the 1990 Budget from two Members were outstanding.
9. The delegate for Brazil explained the reasons for the delay in making their payment and stated that the contribution would be forwarded to the Secretariat in November 1990.
10. The delegate for Argentina also apologised for the late payment and informed the Committee that 60% of the contribution was in the process of being transferred to the Commission and that the balance would be paid by the end of October 1990. An amount of A\$24 780 was received by the Secretariat on 25 October 1990.
11. As requested at the Sixth Meeting, the Executive Secretary had provided a statement of the consequences of late payment of Members' Contributions. Delegations noted that the loss of interest due to the late payment of contributions by a number of Members was regrettable. Some delegations considered that interest should be levied on contributions outstanding after the due date for payment. It was felt by other Members that a possible need to recoup such interest loss may be necessary in the future.
12. The Executive Secretary reported that some delegates had informed him that the payment of contributions would be facilitated if earlier notice of the amount could be given. It was agreed that in future the Executive Secretary would inform Members as soon as possible after the budget for the following year was adopted, of the nominal contribution based on the approved budget total and

also his estimate of the actual contribution taking into account his best estimation of possible reductions to that amount arising out of the Staff Assessment Levy, New Members' Contributions and interest on the Commission funds. Those Members who wished to, could make their contribution according to this estimate. Any adjustment necessary could be made when the actual figures became available.

DRAFT BUDGET FOR 1991

13. The budget paper was presented in the previously agreed format which distinguishes recurrent from non-recurrent expenditure. The objective of zero real growth in recurrent expenditure was not possible because of real growth in salary scales promulgated by the United Nations General Assembly, the need for the Commission to issue certain publications as required under its Convention and the desirability of making known the work of the Commission to a wider audience.

14. Delegates considered in some detail the increase in the Publications item and the need for several new publications. As a result of this consideration, a revised program of publications for 1991 was submitted by the Secretariat.

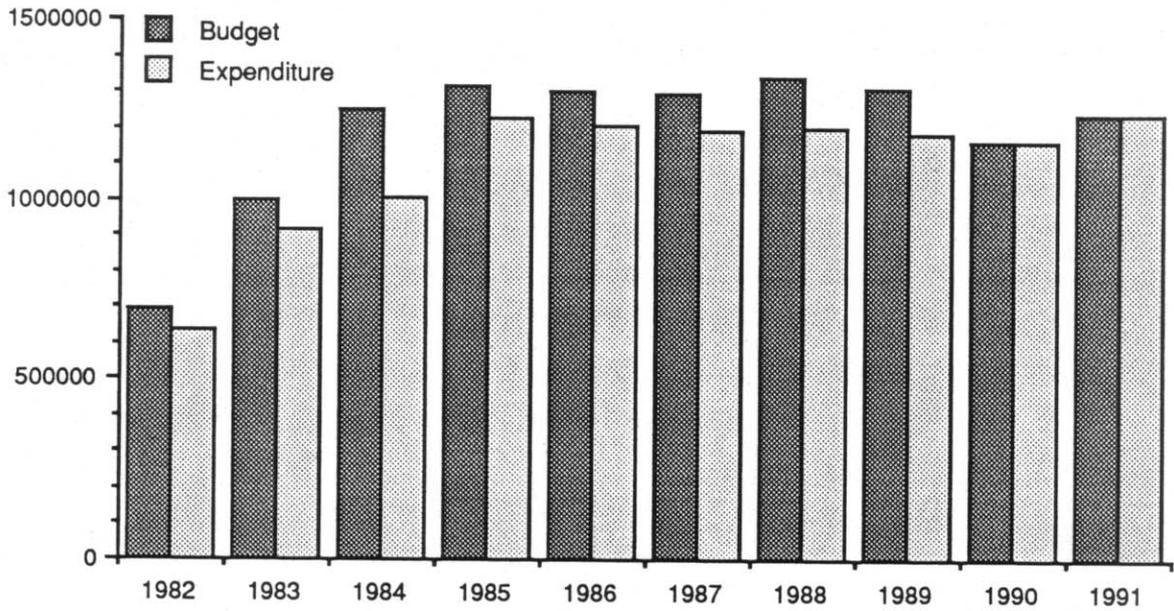
15. The Chairman of the Scientific Committee attended the Meeting to present the proposed budget of his Committee. The expenditure proposals for the Scientific program were generally accepted. The USSR delegation suggested that the Information Brochure on CCAMLR should be mainly produced in one working language of the Commission and the quantity of it should be as close as possible to the number of participants at the Antarctic Science Conference. The USSR delegation noted that the Workshop on Southern Elephant Seals is not a matter of priority in the Scientific Program and could not support the idea of funding that Workshop. The Chairman of the Scientific Committee encouraged all delegates to support the Workshop because of its importance to the work of the Commission. The purpose of the Workshop was to examine the possible causes of the well publicised decline in Southern Elephant Seal populations. He further pointed out that for the Workshop to proceed it must have the support of CCAMLR.

BUDGET RATE OF GROWTH

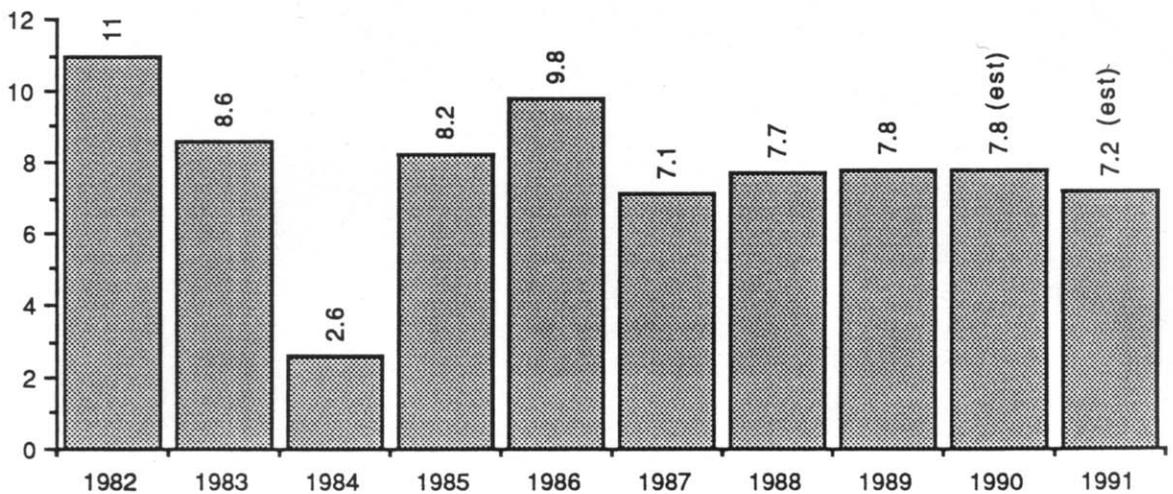
16. The proposed 1991 expenditure of A\$1 324 400 represents a nominal increase of 14.3% over that of the approved 1990 Budget. The rate of inflation for Australia in 1991 is expected to be around 7.2%, thus the 1991 expenditure will increase by 7.1% in real terms. If the expenditure is divided into recurrent and non-recurrent items according to the Commission's practice, recurrent expenditure in 1991 increases in real terms by 5.2%.

17. The Committee noted that the budgets of the Commission increased from 1982 (the year the Commission was established) to 1984 in real terms. This was because these were the formative years of the Commission in which staff were appointed and some working groups were established. From 1985 the Commission's total and non-recurrent expenditure has reduced in real terms (i.e., negative growth has been achieved since that time). The cumulative effect of that real negative growth by far exceeds the real growth projected for the 1991 Budget. The following graphs illustrate this point:

CCAMLR budgets in 1990 Australian dollars
(adjusted to NPV at annual inflation rate)



Annual inflation rate



MEMBERS' CONTRIBUTIONS

18. The Draft Budget for 1991 indicates that the total Members' Contributions after deducting estimated credits, will be \$1 086 834. The contributions calculated according to the agreed formula (CCAMLR-VI, paragraph 28) are estimated as follows:

USSR	A\$86 937
JAPAN	A\$55 245
19 other Members	A\$49 718

19. In 1990 contributions were received from the German Democratic Republic and the Federal Republic of Germany. The calculation of Members' Contributions for 1991 are based on receiving one contribution from the unified Germany.

FORECAST 1992 BUDGET

20. Most items in the Forecast Budget for 1992 are calculated on the basis of the 1991 figures, allowing 6.5% for inflation in 1992.

REVIEW OF FORMULA FOR CALCULATING MEMBERS' CONTRIBUTIONS

21. At its meeting in 1987 the Commission agreed to a formula for calculating Members' Contributions in accordance with Convention Article XIX 3 (CCAMLR-VI, paragraph 28). At that meeting it was decided that the formula should be reviewed in 1990. Such a review was to examine, in particular, the finfish/krill coefficient in the light of additional scientific evidence regarding the relative yield of finfish and krill. From the document CCAMLR IX/3, Attachment A, the Committee concluded that there had been no significant change in the finfish/krill coefficient. Since the introduction of the formula in 1987 no Member has expressed any dissatisfaction with the current method. No alternative formulae have been suggested to the Secretariat. The Committee agreed that the current formula was satisfactory and should remain in use.

PROPOSED AMENDMENT TO STAFF REGULATION 5.3

22. The Committee agreed that Staff Regulation 5.3 should be changed as suggested in document CCAMLR-IX/10. However, the Amendment should not apply to staff members who had been in receipt of the Grant under the existing Regulation. For such staff, the Grant would continue to be made available for the reimbursement of actual costs incurred. In 1991 this is A\$5 000 and should be adjusted for inflation in future years up to the limit specified in the United Nations Staff Rules. For grants approved in the future including those for newly appointed staff, the United Nations Staff Rules would apply which currently allow reimbursement of up to 75% of costs incurred with a maximum grant of US\$6 750.

**PROJECTED INCOME AND EXPENDITURE 1990, BUDGET 1991
AND FORECAST BUDGET 1992
(Australian Dollars)**

1990 Budget			Draft Budget 1991 and Forecast Budget 1992			
(1)	(2)	(3)	Item	Sub Item	(4)	(5)
Budget Adopted 1990	Estimates Projected to 31/12/90	Variance with Budget			1991	1992
INCOME						
951 600	886 555	-65 045		Members' Contributions	1 086 834	1 208 500
				Items from Previous Year		
0	0	0		• Arrears of Contributions	0	0
60 000	73 557	13 557		• Interest	60 000	60 000
0	0	0		• Members' Contributions	0	0
0	27 342	0		• New Members' Contributions	94 400	100 300
70 000	75 959	5 959		• Staff Assessment Levy	94 166	10 300
76 700	122 229	45 529		• Surplus	0	0
1 158 300	1 158 300	0	Total Income		1 324 400	1 368 800
EXPENDITURE						
DATA MANAGEMENT						
12 700	12 700	0		Capital Equipment	0	0
3 200	3 200	0		Consumables	3 400	3 600
30 000	30 000	0		Contract Labour	36 900	39 300
9 600	9 600	0		Maintenance	10 300	10 800
4 600	4 600	0		Time Share Usage	4 900	5 200
60 100	60 100	0	Total Data Management		55 500	58 900
MEETINGS						
326 000	326 000	0	Total Meetings		349 500	372 200
PUBLICATIONS						
94 000	94 000	0	Total Publications		126 000	134 200
SCIENTIFIC COMMITTEE						
86 000	86 000	0	Total Scientific Committee		93 900	96 000
SECRETARIAT COSTS						
15 800	15 800	0		Administration	16 500	17 600
60 800	60 800	0		Allowances	107 200	76 800
4 300	4 300	0		Automobile	4 600	4 900
24 700	24 700	0		Communication	26 500	28 200
3 300	3 300	9		Incidentals	3 500	3 700
3 300	3 300	0		Library	3 500	3 700
23 400	23 400	0		Office Requisites	26 300	28 000
7 700	7 700	0		Premises	8 100	8 600
426 200	426 200	0		Salaries	479 000	510 100
22 700	22 700	0		Travel	24 300	25 900
592 200	592 200	0	Total Secretariat Costs		699 500	707 500
1 158 300	1 158 300		Total Expenditure		1 324 400	1 368 800

Note: In addition to the Scientific Committee 1991 amount, a sum of \$A22 000 is to be drawn from the Norwegian Contribution Special Fund to meet the total Scientific Committee Program of \$A115 900.

**CCAMLR: REQUIRED DATA SUBMISSIONS
FORM COMMERCIAL OPERATIONS**

CCAMLR: REQUIRED DATA SUBMISSIONS FORM COMMERCIAL OPERATIONS

	CONTENT	TARGET	AREA	SPATIAL SCALE	TEMPORAL SCALE	SINCE (AND INCL.)	REFERENCE
STATLANT A and B (FAO designed)	Catch and Effort	All Species	All	Subarea/Division	Monthly	All years of fishery	CCAMLR-II 25–26
Fine-Scale Catch and Effort	Catch and Effort	Fish	All	0.5° latitude by 1.0° longitude	10-day period	1988 (earlier if possible)	CCAMLR-V 66–67
		Krill	Subarea 48.2	“	“	1986	CCAMLR-V 66–67
			Subarea 48.2 and Integrated Study Regions	“	“	1987	CCAMLR-VI 92
			Subareas 48.1, 48.2, 48.3 and all Integrated Study Regions	“	“	1989	CCAMLR-VIII 44(b)
Fine-Scale Longlines	Catch and Effort	Fish by longline	All	Precise location	Haul-by-haul	1989	CCAMLR-VIII 109
Squid Catch and Effort	Catch and Effort	Squid	All	Precise location	Haul-by-haul	1989	CCAMLR-VIII 55
Biological	Length frequencies Age/length keys Age based data	Fish	All	0.5° latitude by 1.0° longitude	10-day period	1989 (for as many earlier years as possible) (numerous <u>requests</u> for specific data since)	CCAMLR-V 66–67

**DRAFT CONSERVATION MEASURE – INCIDENTAL
MORTALITY OF SEABIRDS IN THE LONGLINE FISHERY**

DRAFT CONSERVATION MEASURE – INCIDENTAL MORTALITY OF SEABIRDS IN THE LONGLINE FISHERY

Minimisation of the incidental mortality of seabirds in the course of longline fishing or longline fishing research in the Convention Area.

The Commission,

Noting the need to reduce the incidental mortality of seabirds during longline fishing by minimising their attraction to the fishing vessels and by preventing them from attempting to seize baited hooks, particularly during the period when the lines are set.

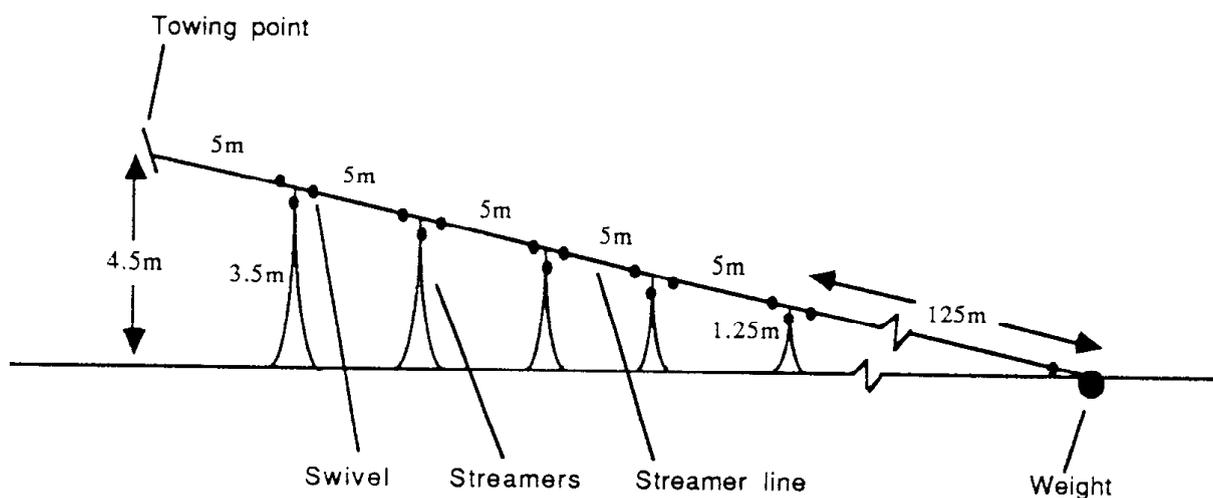
Recognising that successful techniques for reducing the mortality of albatrosses have been employed in the longline fishery for tuna immediately to the north of the Convention Area.

Agrees to the following measures to reduce the possibility of incidental mortality of seabirds during longline fishing.

1. Fishing operations shall be conducted in such a way that the baited hooks sink as soon as possible after they are put in the water.
2. During the setting of longlines at night only the minimum ship's lights necessary for safety shall be used.
3. Trash and offal are not to be dumped while longline operations are in progress.
4. A streamer line designed to discourage birds from settling on baits during deployment of longlines shall be towed during daylight operations. The specification of the streamer line and its method of deployment is given in the Appendix to this Measure.
5. This Measure shall not apply to designated research vessels investigating better methods for reducing incidental mortality of seabirds.

APPENDIX

1. The streamer line is to be suspended at the stern from a point approximately 4.5 m above the water and such that the line is directly above the point where the baits hit the water.
2. The streamer line is to be approximately 3 mm diameter, have a minimum length of 150 m and be weighted at the end so that it streams directly behind the ship even in cross winds.
3. At 5 m intervals commencing from the point of attachment to the ship 5 branch streamers each comprising 2 strands of approximately 3 mm diameter cord should be attached. The length of the streamer should range between approximately 3.5 m nearest the ship to approximately 1.25 m for the fifth streamer. When the streamer line is deployed the branch streamers should reach the sea surface and periodically dip into it as the ship heaves. Swivels should be placed in the streamer line at the towing point, before and after the point of attachment of each branch streamer and immediately before any weight placed on the end of the streamer line. Each branch streamer should also have a swivel at its attachment to the streamer line.



**REPORT OF THE MEETING OF THE WORKING GROUP FOR THE
DEVELOPMENT OF APPROACHES TO CONSERVATION OF
ANTARCTIC MARINE LIVING RESOURCES (WG-DAC)**

**REPORT OF THE MEETING OF THE WORKING GROUP FOR THE
DEVELOPMENT OF APPROACHES TO CONSERVATION OF
ANTARCTIC MARINE LIVING RESOURCES (WG-DAC)**

The Commission's Working Group for the Development of Approaches to the Conservation of Antarctic Marine Living Resources (WG-DAC), chaired by Australia, held its meeting at CCAMLR-IX on 21 October 1990.

2. The Convener had written to Members on 8 August 1990 (COMM CIRC 90/36) suggesting that the Working Group concentrate on two issues in 1990;

- the development of approaches to achieve the conservation objective in Article II 3 (b); the restoration of depleted populations to levels which ensure stable recruitment; and
- what constitutes the 'best scientific evidence available' that Article IX 1 (f) requires the Commission to use as the basis for formulating, adopting and revising Conservation Measures.

The Working Group adopted the agenda prepared by the Executive Secretary which provided for consideration of these two items.

3. Two papers were submitted in response to the Convener's letter, both by Australia; 'Refinements to the Strategy for Managing Depleted Fish Stocks based on CCAMLR Objectives' also submitted as SC-CAMLR-IX/BG/14 (Appendix 1), and 'The Making of Management Policy Decisions' (WG-DAC-90/5) (Appendix 2).

4. Australia presented SC-CAMLR-IX/BG/14 (Appendix 1). The paper gave some specific illustrations which show that the Commission's current policy of basing fishing mortality on $F_{0.1}$ is not appropriate for depleted stocks. It outlined a possible extension to the Commission's policy for managing depleted stocks. This extension involved setting TACs (which in practice would usually be by-catch limits) which would be in accord with the general objectives given in Article II for restoring depleted stocks to levels near those giving 'greatest net annual increment' within two or three decades. The paper illustrated in principle how these catch limits could be calculated for specified levels of probability of achieving the requisite stock recovery. One of the features of the method is that it takes uncertainty in stock assessments into account. The paper included a number of technical details which were expected to be discussed in the Scientific Committee.

5. The paper addressed some implications of the method for operational definitions of 'depletion' and 'target levels for recovering stocks'. These were questions which WG-DAC had requested the Scientific Committee to consider, and it was intended that the paper would provide a basis for further development of responses to these questions. The illustrative calculations showed that uncertainty in stock assessment and the relationship between stock-size and recruitment were both very important in determining by-catch limits.

6. WG-DAC concluded that the approach outlined in the paper was worth further development as a means for providing an objective basis for determining by-catch limits for depleted stocks. It was recognised that considerable further developments were required before the procedure was complete. WG-DAC and the Commission will need to give further consideration to operational definitions of the type illustrated in the paper which take uncertainty into account. WG-DAC reiterated the importance of the Scientific Committee working towards operational definitions for 'depletion' and 'target levels for recovery' and providing further advice as soon as possible. It was further recognised that refinement of the Commission's policy for managing the recovery of depleted stocks would be assisted by operational procedures for determining the level of 'greatest net annual increment'. Article II 3 (a) specifies the level above which stable recruitment is deemed to occur as 'a level close to that which ensures the greatest net annual increment'. An operational definition for the words 'close to' will also be required.

7. Australia then presented WG-DAC-90/5 (Appendix 2), outlining the relative responsibilities of the Commission and Scientific Committee in relation to the collection and analysis of scientific information and the adoption of Conservation Measures, as provided for under the Convention, and noting the comments of the Convener of the Working Group for Fish Stock Assessment (WG-FSA) in his personal statement to CCAMLR-VIII (CCAMLR-VIII, Annex F) on the issue.

8. It was argued that the Commission must make two judgements in meeting its obligation under Article IX 1 (f) to formulate, adopt and revise Conservation Measures on the basis of the best scientific evidence available; what is the best scientific evidence, and what management action it indicates. Guidance to the Commission on how to make the second of these judgements is contained in Article II of the Convention. The only guidance the Convention gives in relation to the first is that the Commission should take full account of the decisions and recommendations of the Scientific Committee.

9. Examples of the decision making process in the Commission and the process of formulating advice in the Scientific Committee were given, some of which showed where no management action had been taken despite available evidence indicating the need for it. It was noted that the direction to act on the best scientific evidence available suggests that it does not matter to what degree of

certainty the available evidence indicates a particular action, if it is the best scientific evidence available the Commission is obliged to act on it, and that instances such as those described could be seen as the Commission failing to meet its obligations under Article IX.

10. WG-DAC considered these issues and recommended that the Commission acknowledge that it regards the Scientific Committee as the source of the best scientific evidence available, and that it would not therefore be appropriate for management decisions to be based on data and information which had not been provided to the Scientific Committee in a timely fashion. This would highlight the importance of Members meeting their obligation under Article XX to provide necessary data and information. WG-DAC further suggested that, if the Commission finds itself unable to act on the Scientific Committee's advice, it should make clear what evidence it is acting on.

11. In considering this issue, WG-DAC recalled earlier discussions and emphasised the need for the Scientific Committee to present advice to the Commission which takes account of the uncertainty in the evidence on which it is based and which clearly indicates the implications of the adoption of different management responses. The implications for the Scientific Committee in attempting to take account of uncertainty in their advice were discussed, and it was pointed out that there were two main reasons for uncertainty in this context; lack of necessary data, and divergent, or imprecise conclusions from analyses of available data. The Working Group concluded that both sources of uncertainty must be addressed.

12. At CCAMLR-VII, WG-DAC had agreed that information on plans for fishery development and descriptions of operational tactics applied to fishing activities were important in the development and evaluation of approaches to conservation. WG-DAC reiterated the value of this information for this purpose and in formulating future management and research work programs.

13. At CCAMLR-VIII, WG-DAC had identified the approach to be taken in relation to new and developing fisheries as a key topic for consideration by the Commission (CCAMLR-VIII, paragraph 66), and the Commission referred questions which had arisen from consideration of the issue to the WG-FSA (CCAMLR-VIII, paragraph 123). WG-DAC noted that the WG-FSA had responded and that their response would be examined by the Commission under Item 9 of its Agenda.

REFINEMENTS TO THE STRATEGY FOR MANAGING DEPLETED FISH STOCKS BASED ON CCAMLR OBJECTIVES

William K. de la Mare¹

Andrew Constable²

Abstract

A method of calculating fishing mortalities which will allow depleted fish stocks to recover to levels near those giving greatest net annual increment within two to three decades is illustrated. These fishing mortalities are based on probabilistic descriptions of the future states of a depleted stock, and take into account uncertainty in assessments. Sample calculations show that applying a policy of $F_{0.1}$ will not always lead to stock recovery in two to three decades, and hence that additional management policies are required for depleted stocks. The implications of these studies for defining the terms 'depleted' and 'target levels for recovery' are briefly discussed.

In 1988, the Working Group for the Development of Approaches to Conservation of Antarctic Marine Living Resources (WG-DAC) suggested that the interpretation of Article II of the CCAMLR Convention would be assisted by the development of operational definitions for depletion and for target levels for recovery of depleted populations (CCAMLR-VII, paragraph 140). In 1987, the Commission adopted the yield-per-recruit fishing mortality $F_{0.1}$ as the appropriate management strategy for fish stocks (CCAMLR-VI, paragraph 61). The studies in this paper explore an approach to calculating values of fishing mortality (F) other than $F_{0.1}$ which are more appropriate in terms of the requirements of Article II of the Convention for fish stocks which have been reduced to low levels. This approach represents a starting point for extending the management strategy to the case of depleted fish stocks, and points to factors to consider in formulating operational definitions of depleted and target levels for recovery.

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2. The part of Article II directly applicable to harvesting objectives states:

‘3 Any harvesting and associated activities in the area to which this Convention applies shall be conducted in accordance with the provisions of this Convention and with the following principles of conservation:

- (a) prevention of decrease in the size of any harvested population to levels below those which ensure its stable recruitment. For this purpose its size should not be allowed to fall below a level close to that which ensures the greatest net annual increment;
- (b) maintenance of the ecological relationships between harvested, dependent and related populations of Antarctic marine living resources and the restoration of depleted populations to the levels defined in sub-paragraph (a) above; and
- (c) prevention of changes or minimisation of the risk of changes in the marine ecosystem which are not potentially reversible over two or three decades, taking into account the state of available knowledge of the direct and indirect impact of harvesting, the effect of the introduction of alien species, the effects of associated activities on the marine ecosystem and of the effects of environmental changes with the aim of making possible the sustained conservation of Antarctic marine living resources.

3. From these general objectives, several key concepts relevant to the management of depleted stocks stand out:

- (i) depleted populations are below levels near to the population level giving greatest net annual increment (GNAI);
- (ii) the minimum population level posited to ensure stable recruitment is equated with GNAI; and
- (iii) the effects of exploitation should be compatible with potential reversibility in two or three decades, taking into account the state of available knowledge of, *inter alia*, the direct and indirect impact of harvesting.

4. The general objectives need to be supplemented to render their meaning more precise for the purposes of formulating advice in the Scientific Committee. It is very unlikely that in the near term

that levels of GNAI for various stocks will be able to be estimated directly. Thus, levels will probably be chosen on the basis of conventional fisheries models. Similarly, identifying stock-recruitment (S-R) relationships will also be extremely difficult, and some form of model will have to be selected which is compatible with the concepts (i), (ii) and (iii) above.

5. A further factor to take into consideration is some practical way is the state of available knowledge about the stocks. Inevitably assessments of the state of a stock will include uncertainty, for example, due to sampling variability. This uncertainty needs to be taken into account when formulating management advice.

6. A framework which integrates the elementary concepts above can be formulated as follows. An assessment is made of a fish stock, using whatever methods and data are available, to estimate the current stock level and the mean stock level which would exist without fishing. If the 'best' estimate of current stock level is substantially below GNAI (expressed as a fraction of the unfished mean stock level) then it is deemed to be depleted and hence fishing mortality must be set at levels which should not preclude stock recovery to GNAI (or other target level) within two or three decades. A 'best' estimate would be the mean or median of a probability density function which incorporates the uncertainty in the quantities estimated. Using this information, the following fishing mortalities are calculated using a stock projection computer program:

- (i) the fishing mortality which results in a specified subjective probability that the stock will be above the current level in 20 years;
- (ii) the fishing mortality which results in a subjective probability of 0.5 that the stock is at or above GNAI (or other target level) in 20 years;
- (iii) the fishing mortality which results in a specified subjective probability that the stock is above GNAI (or other target level) in 30 years; and
- (iv) the fishing mortality corresponding to $F_{0.1}$.

7. A TAC (which might be a by-catch limit in practice) would be set using whichever of these fishing mortalities was lowest. The assessments would be revised as new data became available. Once the procedure has been put into effect the target years for recovery become fixed at 20 and 30 years after the procedure is first put into effect. Thus, the fishing mortalities specified above have to be calculated using shorter projections as time progresses. The fishing mortalities would also be revised as more information accrues about the status of the stock.

8. The underlying process in calculating the probabilities is illustrated in Figure 1. In year 0 an estimate is available of the biomass relative to the average unexploited biomass. Around this point estimate will lie some distribution expressing degrees of belief in alternative values for the estimate. Calculating the subjective probability of the state of the stock at a given time in the future could be done with population projections. Each interval, such as A, B or C in the probability distribution in the current assessment of the stock, can be projected forward with given values of F. However, because recruitment is stochastic, (and also because of uncertainty in the population dynamics) there will be a distribution of final population sizes for each current population size projected forward, shown as A', B' and C'. The probability distribution at year 20 is the sum of the projected distributions, for the set of current stock states in the distribution associated with the current assessment, weighted by their subjective probabilities.

9. These calculations will most likely have to be carried out numerically, using multiple simulation projections with some parametric or empirical model for generating variability in recruitment. In addition, some form of stock-recruitment model will be required. The starting point for the projections would be the centres of a range of intervals in the distribution of the current stock status. The weight to be applied to the distribution of the projections is the area of the respective starting interval.

10. A computer program implementing this algorithm has been used to generate some approximate results to illustrate some of the properties of the fishing mortalities defined above. A modified version of the CCAMLR stochastic population projection program (PROJ) was used to set a deterministic initial age-structure for hypothetical fish stocks. The same model was then used with stochastic recruitment for the projections, however, using catches-by-weight, rather than applying fishing mortality. The catches-by-weight were calculated using the biomass from a deterministic projection (i.e., no recruitment fluctuation) of the median of the current stock assessment. This series of catches was applied for each interval selected from the distribution about the current stock estimate. 100 projections with recruitment fluctuation were made from 20 intervals. Other sources of uncertainty, for example, in the population dynamics parameters such as natural mortality (M) and growth rates, could also in principle be taken into account in the assessment and in the stock projections, but this has not been attempted here.

11. Calculations were made for two hypothetical fish stocks with different levels of production, one relatively high, the other relatively low. The population dynamics parameters for the two stocks are given in Table 1. Two current stock states are examined, one with the population at 30% of average pre-exploitation biomass, and the other at 5%. GNAI is taken to be 50% of the average pre-exploitation biomass. Two stock recruitment relationships are used, one with the recruitment constant (independent of stock size, denoted C in the table) and the other with recruitment declining

linearly to zero for stock sizes less than 50% of the unexploited level (denoted L). These particular forms were chosen because they represent the bounds of the plausible S–R relationships which might apply below GNAI. Stochastic variation in recruitment is drawn from a lognormal distribution with median determined by the S–R relationship and a coefficient of variation of 0.4. The subjective probability distribution of the estimate of the current status of the stock is taken to be normal, with median equal to the true value of the stock assessment. CVs of 0.1 and 0.3 are used for this distribution. This leads to a total of 16 cases, with results shown in Table 2.

12. The fishing mortalities given in the table are those which would result in:

- (i) $F_{0.1}$;
- (ii) 95% confidence in the stock being above the current level in year 20 (denoted $P_{L,20} > 0.95$ in the table);
- (iii) 50% confidence in the stock being above GNAI in year 20 (denoted $P_{\text{GNAI},20} = 0.5$ in the table); and
- (iv) 95% confidence in the stock being above GNAI in year 30 (denoted $P_{\text{GNAI},30} = 0.95$ in the table).

13. There are several points worth noting about the results. In most cases, the fishing mortalities required to meet all of the three criteria relating to projected outcomes in two to three decades are less than $F_{0.1}$. This has clear significance for applying $F_{0.1}$ for stocks below GNAI, in that it will not necessarily lead to fulfilment of the basic objective of reversibility in two to three decades. This suggests that an operational definition of depletion for fish stocks would involve the concept that the stock state is such that the application of the normal policy for applying $F_{0.1}$ will not lead to the stock being restored to at or near GNAI within two to three decades.

14. In all these cases, the fishing mortality which gives 95% probability of exceeding GNAI is the limiting value. The value is lower for the more uncertain estimate of current stock status. A population recovery level different from GNAI might be selected for this particular criterion in light of the language of Article II 3(a) which is couched in terms of levels ‘close to that which ensures’ GNAI; the definitions and calculations given here are illustrative. However, the calculations point to the selection of the level to be used in such a criterion as having a significant effect on the level of fishing allowed on recovering stocks.

15. As might be expected, the S-R relationship plays a major role in determining the critical value of the fishing mortality. A constant S-R relationship is an implausible choice for stocks depleted substantially below GNAI. Where a more suitable form of S-R is unknown, it may be appropriate to use the linear model given here, in order to determine fishing mortalities at a likely lower bound with regard to uncertainty in the S-R relationship.

16. Interestingly, the degree of uncertainty in the estimate of current stock status does not have a great effect on the levels of fishing mortality which would prevent further decline over 20 fishing years or lead to median recovery to GNAI by year 20. However, the 95% probability of being above GNAI by year 30 is sensitive to the degree of uncertainty in the current stock status estimate. This uncertainty would be reduced as further data accrued, and consequent recalculation of the various fishing mortalities could lead to increased TACs, at least in cases where the fishing mortality for 95% recovery by year 30 is binding.

17. The final column in the table shows the median value to which the stocks would be expected to recover under the lowest of the fishing mortalities calculated (i.e., 95% probability of being above GNAI in three decades). In many cases it can be seen that these levels are not greatly above GNAI, and the form of calculation suggests a procedure for selecting target levels for exploited stocks which takes into account uncertainty in estimates of stock status. This would entail managing the stocks by choosing a stock target level so that there is a given level of confidence that the stock will be maintained above GNAI (or other nearby selected value).

CONCLUSION AND DISCUSSION

18. There are more important details to sort out for methods of estimating the status of the stock with respect to the average pre-exploitation biomass, and in particular how to formulate a subjective probability distribution about such estimates. Consideration needs to be given to procedures to apply in cases where the available data are too sketchy to calculate subjective probability distributions for the current assessment, or to assess variability in recruitment. The routine application of the calculations presented in this paper will require the development of a more sophisticated computer program than that used to make the illustrative calculations here.

19. The calculation of fishing mortalities which lead to assessments of the subjective probability of a depleted stock being in a state conformable with the basic objectives of the Convention seems to be a promising line of enquiry for further refining the Commission's management policy for finfish stocks. It is shown that the current strategy of applying $F_{0.1}$ would not always be sufficient for restoring depleted populations to the levels envisaged in the Convention. The approach outline here

gives an objective basis for basing scientific advice on fishing mortalities which will be expected to achieve management goals with selected levels of probability. The selection of the probability level to apply is not a purely scientific question, and hence guidance from the Commission will be required. However, this will be most easily obtained if further analyses on the properties of these or other suggestions for definitions and procedures can be carried out so that the Commission has an objective and quantitative bases for selecting management policy parameters.

ACKNOWLEDGMENT

20. The authors are indebted to Dr Larry Jacobson and Matt Perchard, the authors of the PROJ simulation program used as a component in the computer program for the calculations presented in this paper.

Table 1: Population parameters used for the two hypothetical fish stocks.

Lower yielding stock	
Natural Mortality	= 0.15 year ⁻¹
Von Bertalanffy K	= 0.12 year ⁻¹
Von Bertalanffy W ₈	= 2 500 grams
Age at first fishing	= 5 years (knife-edge)
Age at first spawning	= 5 years (knife-edge)
Pooled age-class	= 20 years
Higher yielding stock	
Natural Mortality	= 0.40 year ⁻¹
Von Bertalanffy K	= 0.20 year ⁻¹
Von Bertalanffy W ₈	= 1 000 grams
Age at first fishing	= 3 years (knife-edge)
Age at first spawning	= 3 years (knife-edge)
Pooled age-class	= 10 years

Table 2: Fishing mortality rates consistent with each of the three criteria for managing stocks below the putative level giving greatest net annual increment. (See text for explanation of terms.)

S/R	CV	Current Stock	P _{L,20} >0.95	P _{GNAI,20} =0.5	P _{GNAI,30} =0.95	Stock at 30 years
Lower yielding stock (F _{0,1} = 0.123)						
C	0.1	0.30	0.210	0.139	0.130	0.63
L	0.1	0.30	0.044	0.041	0.029	0.75
C	0.3	0.30	0.103	0.112	0.074	0.63
L	0.3	0.30	0.012	0.041	0.008	0.92
C	0.1	0.05	0.318	0.106	0.071	0.62
L	0.1	0.05	0.044	0.	0.	0.23
C	0.3	0.05	0.197	0.104	0.067	0.65
L	0.3	0.05	0.011	0.	0.	0.23
Higher yielding stock (F _{0,1} = 0.336)						
C	0.1	0.30	0.304	0.340	0.150	0.69
L	0.1	0.30	0.073	0.117	0.057	0.88
C	0.3	0.30	0.302	0.340	0.150	0.69
L	0.3	0.30	0.032	0.120	0.031	0.94
C	0.1	0.05	<1.0*	0.367	0.150	0.75
L	0.1	0.05	0.087	0.	0.	0.83
C	0.3	0.05	<1.0*	0.355	0.149	0.70
L	0.3	0.05	0.011	0.	0.	0.83

* Approximate values – current version of computer program failed to converge on more accurate solutions.

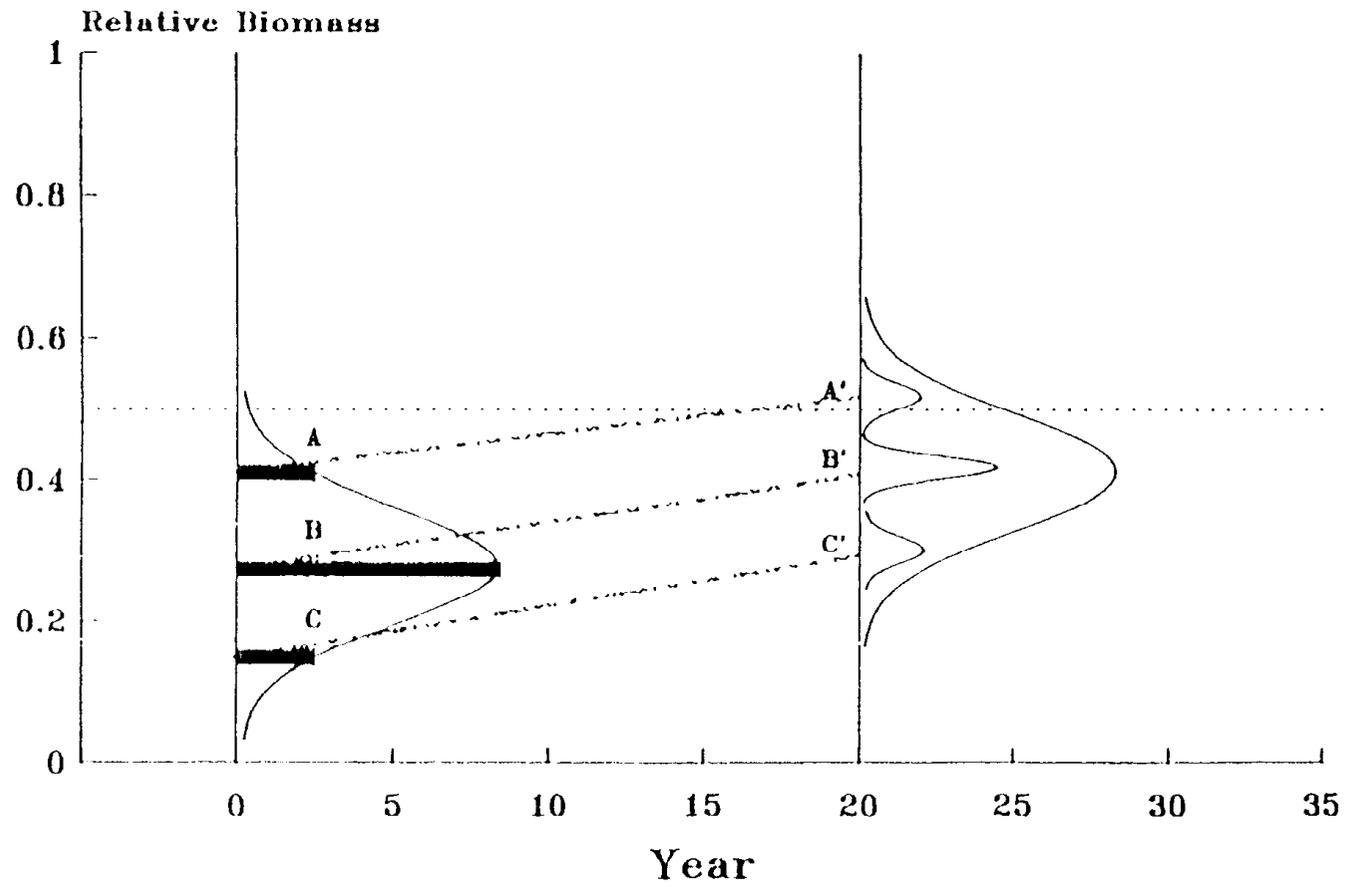


Figure 1: Schematic illustration of the method of calculating subjective probabilities of future states of a fish stock by stochastic forward projection of the subjective probability distribution associated with the current stock assessment.

THE MAKING OF MANAGEMENT POLICY DECISIONS

An examination of the ways in which scientific evidence is being used by the Commission to aid its decision-making

INTRODUCTION

The Convener's letter to Members of the Working Group for the Development of Approaches to Conservation of Antarctic Marine Living Resources (WG-DAC) suggested that at CCAMLR-IX the Working Group could consider what constitutes 'the best scientific evidence available' that Article IX 1 (f) of the Convention requires the Commission to use as the basis for formulating, adopting and revising Conservation Measures.

2. The evidence on which the Commission's management decisions are based is a key consideration in the development of possible conservation approaches for achieving the objectives of the Convention and therefore an appropriate question for the Working Group to consider. Until CCAMLR-VIII, the Working Group has largely worked to define the best approaches to conservation in the abstract, but at CCAMLR-VIII, Australia proposed that the Working Group consider the approach that should be taken to the management of new and developing fisheries. This issue has now been taken up by the Commission. As a further step, examination of an aspect of the Commission's decision-making process could prove useful both in improving current decision-making and in defining more refined and effective approaches to conservation. This paper therefore examines how the Commission has obtained and used the evidence on which it bases its decisions, giving particular attention to the role of the Scientific Committee and its subsidiary groups.

THE ROLE OF THE COMMISSION

3. Under the Convention (Article IX) the Commission's role is to 'give effect to the objective and principles set out in Article II'. Article IX 1 spells out how it is to achieve this by requiring it to:

- *facilitate research into and comprehensive studies of Antarctic marine living resources and of the Antarctic marine ecosystem, paragraph (a);*

- *ensure the acquisition of, compile, analyse, disseminate and publish ... information, including the reports of the Scientific Committee, on the status of and changes in populations of Antarctic marine living resources and on factors affecting the distribution, abundance and productivity of harvested species and dependant or related species or populations, paragraphs (b), (c) and (d);*
- *identify conservation needs, paragraph (e);*
- *formulate, adopt and revise conservation measures on the basis of the best scientific evidence available, paragraph (f): and*
- *analyse the effectiveness of conservation measures, paragraph (e).*

4. In exercising these functions, the Commission must (under Article IX 4) ‘take full account of the recommendations and advice of the Scientific Committee’.

THE ROLE OF THE SCIENTIFIC COMMITTEE

5. The Scientific Committee is established under Article XIV as a consultative body to the Commission made up of suitably qualified Members’ representatives assisted by other experts and advisers. The Scientific Committee may also seek the advice of other scientists and experts as required to meet its obligation under Article XV to ‘provide a forum for consultation and cooperation concerning the collection, study and exchange of information with respect to the marine living resources to which (the) Convention applies and to encourage and promote cooperation in the field of scientific research in order to extend knowledge’ of these resources. It is required under Article XV to ‘conduct such activities as the Commission may direct in pursuance of the objective of the Convention’ and under Article XV 2 to:

- *establish criteria and methods to be used for determinations concerning ... conservation measures, paragraph (a);*
- *regularly assess the status and trends of the populations of Antarctic marine living resources, analyse data concerning the direct and indirect effects of harvesting on these populations, and assess the effects of proposed changes in the methods or levels of harvesting and proposed conservation measures, paragraphs (b), (c) and (d); and*

- *transmit assessments, analyses, reports and recommendations to the Commission as requested or on its own initiative regarding measures and research to implement the objective of (the) Convention, paragraph (e).*

6. To assist in producing this information for the Commission the Scientific Committee has established specialist working groups on fish, krill and the CCAMLR Ecosystem Monitoring Program. As the Commission has so far adopted Conservation Measures relating to fish only, this paper looks at the Working Group on Fish Stock Assessment (WG-FSA) rather than the other working groups.

7. The WG-FSA was established as an *ad hoc* group at CCAMLR-III in 1984 with the following terms of reference:

- to identify those fish stocks which might appear to be heavily fished and for which conservation action might be necessary; and
- to indicate the options for Conservation Measures in respect of these stocks.

THE DECISION-MAKING PROCESS

8. In undertaking its role to ‘formulate, adopt and revise Conservation Measures’ the Commission must act ‘on the basis of the best scientific evidence available’. For this obligation to be met the Commission must make two judgements; what is the best evidence and what management action does it indicate. The guidance given by the Convention on how the Commission is to make the second of these judgements is contained in Article II. The only guidance in relation to the first is that the Commission should take full account of the advice and recommendations of the Scientific Committee.

9. During the period of CCAMLR’s operation, the WG-FSA, the Scientific Committee and the Commission have all, on occasion, had trouble reaching consensus on each of these matters. The issues have become more confused as advice is passed from one body to the other and made it difficult to ensure that the Commission is meeting its obligation under Article IX 1(f). It has, in particular, led to some occasions where no action has been taken despite available evidence indicating the need for action. This would appear to be contrary to Article IX. The direction to act on ‘the best scientific evidence available’ suggests that it does not matter to what degree of certainty the available evidence indicates a particular action; if it is the best evidence available, the Commission is obliged to act on it.

10. Early in CCAMLR's operation the basis for this problem was largely lack of data. For example, at CCAMLR-III in considering the work of the WG-FSA, the Scientific Committee noted that 'there are insufficient data available to specify a detailed management program' (SC-CAMLR-III, paragraph 7.48). The lack of data led different Members of SC-CAMLR to different conclusions about the appropriate management response. At SC-CAMLR-IV available data indicated that a particular stock was in a very serious state and one Member proposed that 'in the absence of adequate data to determine the effectiveness of other measures, there should be an indefinite closure of the South Georgia region until enough data had been received by the Commission to estimate safe levels of yield' (SC-CAMLR-IV, paragraph 4.37). Some other Members supported such a course of action. Another Member suggested that 'if there were deficiencies in the supply of data, the proper course would be to postpone decisions to encourage data submission, and discuss the matter further next year when better data should be available' (SC-CAMLR-IV, paragraph 4.44). This view also drew support. The discussion was summarised by noting that 'the Scientific Committee strongly urged the Commission to take action to conserve and protect' the depleted stocks 'but could not agree on additional management measures necessary to ensure the conservation of the species'.

11. The Commission's reaction mirrored this divergence of views. Some delegations emphasised that the Scientific Committee's advice 'should always be based on the results of carefully conducted scientific research Other delegations ... pointed out that ... according to the advice of the Scientific Committee there was a need to institute management measures immediately and the Commission ... had to base its decisions on currently available information' (CCAMLR-IV, paragraphs 33 to 34).

12. This led Australia to suggest in the Commission that an item be included in the CCAMLR-V agenda 'structured towards defining a conservation and management strategy for Antarctic marine living resources' (CCAMLR-IV, paragraph 42) and to the formation of the Working Group for the Development of Approaches to the Conservation of Antarctic Marine Living Resources (WG-DAC).

13. In past meetings some Members of the WG-DAC, including Australia, have suggested that the best means to ensure that Conservation Measures were introduced when the need for them was indicated would be to define 'decision rules' which would enable the practical application of the objectives of the Convention. Such rules would designate what application or variation of Conservation Measures would be appropriate for any given assessment of the state of a particular stock. The development of such rules has been envisaged as an iterative process in which information from fisheries and other sources about the state of stocks would be used to set rules

which progressively more accurately allow the maximum sustainable harvest consistent with the conservation objectives of the Convention and the interest of all the Members of the Commission.

14. The developments within the WG-DAC have been paralleled in the work of the Scientific Committee and its Working Groups. At CCAMLR-V, the WG-FSA suggested that, in the face of uncertainty inherent in determining the status of stocks in relation to the conservation objectives contained in Article II, the Scientific Committee 'might discuss the possibility of introducing some relatively easily measurable criteria for bringing into effect different management measures' (SC-CAMLR-V, paragraph 4.10). While consideration of this suggestion was deferred pending the outcome of the Commission's consideration of the work of WG-DAC, the WG-FSA's report led SC-CAMLR to present a number of options for management action in Subarea 48.3 (SC-CAMLR-V, paragraph 4.49).

15. The Commission however 'was unable to agree upon additional measures to limit fishing' in this area as 'there was divergence of views' over what measures were appropriate. 'Members carrying out fisheries in this area took the position that ... limitations of catch for the 1986/87 season should be fixed at the level of catch for the 1985/86 season' while 'a number of other Members took the view that such a catch level was inconsistent with the advice of the Scientific Committee' (CCAMLR-V, paragraph 51). 'In these circumstances, the Commission could not reach agreement on a limitation of catch' for the area (CCAMLR-V, paragraph 52). In lieu, it was agreed that such measures or their equivalent should be introduced at CCAMLR-VI (Conservation Measure 7/V) and that the Scientific Committee should work in the intersessional period to improve the content and presentation of their advice. One delegate's reaction to these decisions was 'to record his delegation's concern that Conservation Measures be based on the best scientific evidence' and that, 'although he was not objecting to Conservation Measure 7/V, which had been adopted after careful deliberation', the measure should not in any way be interpreted as prejudging the results of future analyses by the Scientific Committee' (CCAMLR-V, paragraph 56).

16. This reaction is worthy of further consideration in this context. As there is no clear statement in the CCAMLR-V Report about the evidence on which the adoption of Conservation Measure 7/V is based, it is unclear as to whether the Commission's obligations under Article IX 1 (f) of the Convention to 'formulate, adopt and revise Conservation Measures on the basis of the best scientific evidence available' is being met in this case.

17. CCAMLR-VIII provided further examples of this difficulty. In the Scientific Committee's consideration of the advice of the WG-FSA's report in formulating general management advice for the Commission on fish stocks in Subarea 48.3, all Members except the USSR considered that a stock by stock approach to management of fish stocks was no longer adequate to ensure

conservation of the fish resources. In the face of advice that the status of stocks in the subarea was either unknown due to lack of data, uncertain due to wide differences in the results of different analyses or depleted and in need of protection, the majority opinion was that the efficiency of a stock by stock approach was currently low.

18. In the Commission, most Members agreed that all available evidence indicated that restoration of significantly depleted stocks would best be achieved by a complete closure of the statistical area, especially Subarea 48.3, to finfishing. The Soviet Union reiterated its opinion that an approach which examined individual stocks is adequate to ensure conservation of fish resources. The Commission therefore continued to adopt a stock by stock approach in the absence of consensus to the contrary (CCAMLR-VIII, paragraphs 90 to 92). The WG-FSA Convener made a personal statement commenting on this response. The essence of his statement was that he considered the advice given by the WG-FSA and endorsed by the Scientific Committee to be the best scientific advice available and that he could not accept that the Commission could discredit or ignore this advice without indicating what level of certainty is necessary for such advice to be acceptable.

19. Another instance involved the setting of a TAC level for *Champscephalus gunnari* in Subarea 48.3 for the 1989/90 season. The Scientific Committee was presented with two vastly different estimates of the stock and the Scientific Committee could not reach agreement on the reliability of the results. 'A number of delegations expressed the view that ... any compromise position, e.g., the setting of a TAC based on the average value of the two assessments ... will lead to (either) a substantial depletion of the stock ... (or) ... 'the stock will increase substantially'. The Commission agreed on a TAC of 8 000 tonnes, 'being a TAC based on the lower biomass ... plus an addition for the area not covered in the survey which provided that biomass estimate'.

20. An even more striking example is the refinement of mesh size regulations. The Commission's general fisheries management strategy, first stated at CCAMLR-VI, and largely reiterated at CCAMLR-VIII (CCAMLR-VIII, paragraph 77) included the protection for small fish by means of, among other measures, establishing a minimum mesh size that will allow small fish to escape. Mesh size regulations had first been introduced at CCAMLR-III (Conservation Measure 2/III). Conservation Measure 4/V supplemented Measure 2/III. At CCAMLR-VI, the Commission requested the Scientific Committee to provide advice, for *Champscephalus gunnari* and other species, on the appropriate mesh size to protect young fish, and in particular noted that mesh selectivity studies should be conducted and reported to the Commission as soon as possible. The Scientific Committee provided advice on this issue at CCAMLR-VII. There was considerable discussion on the background to and interpretation of this advice and suggestions that further analysis of data that had been submitted (Polish and Spanish) and data of which Members were aware

(USSR) was required. The Commission noted with some concern that some of the views expressed were not clearly reflected in the advice of the Scientific Committee and therefore asked the Scientific Committee to complete the evaluation of the whole topic taking into account the Commission's management strategy.

21. At CCAMLR-VIII, the Scientific Committee provided detailed advice and recommended that the Commission consider introducing new minimum mesh sizes and associated measures. The Commission noted the advice the Scientific Committee had provided. The Commission also expressed the view that after five years of operation (the mesh size regulation was adopted in 1984) the point should have been reached where it might be reviewed on the basis of completed selectivity experiments, and new measures adopted as recommended by the Scientific Committee (CCAMLR-VIII, paragraph 82). The Soviet Union indicated that it was unable to agree to new mesh size requirements, thus no consensus could be reached on the implementation of the Scientific Committee's recommendations; a failure regretted by other Members of the Commission.

CONCLUSION

22. While continuing its work towards operational definitions of the conservation objectives of the Convention, the Working Group might also consider ways in which the Commission could ensure that it meets, and can be seen to meet, its obligation to formulate, adopt and revise Conservation Measures on the best scientific evidence available. The Working Group might also consider ways in which the Scientific Committee can assist the Commission in meeting this objective.

23. While it is up to the Commission to satisfy itself that no better scientific evidence exists, it has not often sought evidence from sources other than the Scientific Committee, and has acted on the basis of the Scientific Committee providing it with the best evidence. The examples above show that while this is assumed, the relationship between the Scientific Committee's advice and the Commission's decisions is not always clear in its deliberations and reports. If, in its deliberations, the Commission finds itself unable to act on the advice of the Scientific Committee, it should be prepared to make clear what evidence it is acting on, and on what basis it has determined that this evidence is the best available, particularly why it is better than that provided by the Scientific Committee. It should be recalled that the Commission is obliged to act on the best evidence available no matter to what degree of certainty it indicates action.

24. At the same time the Scientific Committee, as CCAMLR's principle scientific advisory body, could possibly assist the Commission in meeting the requirements of Article IX 1(f) if it accepts more fully the responsibility for providing the best available evidence. In presenting a number of options in

its advice, the Scientific Committee has sometimes left the Commission to make decisions on scientific matters as well as management policy matters. This role is within the scope of the Commission's responsibilities under Article IX 1, but the Commission is not well equipped to take on such a role when the time constraints of its annual meetings are considered, nor has it indicated its desire to do so.

25. There may also be scope for assumption of greater responsibility by the Scientific Committee for indicating what conservation action the evidence provided indicates, being aware of the Commission responsibility for judgements and decisions on management policy.

26. There will be varying degrees of scientific uncertainty in the conclusions of the Scientific Committee, but the obligation of the Commission is to act on the best available evidence. If the Scientific Committee's advice were presented in such a way as to make clear the Commission's options in relation to management policy, but to leave no doubt about the scientific validity of the evidence, the Commission may find it easier to meet its obligation.

**REPORT OF THE MEETING OF THE STANDING COMMITTEE
ON OBSERVATION AND INSPECTION (SCOI)**

REPORT OF THE MEETING OF THE STANDING COMMITTEE ON OBSERVATION AND INSPECTION (SCOI)

The Standing Committee met on 24 October 1990 and considered Agenda Items 11 (Observation and Inspection) and 12 (Compliance with Conservation Measures in Force). In the absence of the Spanish Chairman, the meeting was conducted under the chairmanship of the Vice Chair, Australia (Mr J. Burgess).

2. Japan drew attention to the presence of the ASOC observer and expressed its understanding that ASOC's participation in CCAMLR-IX would be restricted to plenary sessions only. The Chairman referred the Committee to the decision of the Commission contained in paragraph 155 of CCAMLR-VIII that ASOC's attendance would be governed by the Commission's Rules of Procedure. Japan expressed the view that the Rules of Procedure provided for restricted sessions for discussion of certain issues. They believed the question of observation and inspection, especially with regard to an individual case of inspection, was one such issue, and requested that Agenda Items 11 and 12 be considered under Commission Rule 32 (b). As a consequence of Japan's request, the Chairman requested that any observers, if present, from the following delegations withdraw from the meeting: Finland, the Netherlands and Uruguay; as well as the following observer organisations: ASOC, FAO, IUCN, IWC, SCAR and SCOR. Observers from ASOC and SCAR accordingly withdrew.

3. Before withdrawing, the representative of SCAR made a statement noting that SCAR had made a recommendation to CCAMLR relating to scientific observation and expressing regret that he would not be available to assist the Committee by elaborating on any of the points raised by SCAR, nor would he have the benefit of hearing the Standing Committee's discussion. A number of delegations expressed deep regret that Japan had invoked Rule 32 (b) because it denied the Committee the opportunity of SCAR's expertise in the matter of observation.

4. Japan reiterated its view that the session regarding the individual case of inspection should be restricted to the Commission Members.

REPORTS OF INSPECTIONS CARRIED OUT IN 1989/90

5. The Committee considered reports of an inspection conducted by the United States on a Japanese vessel on 1 March 1990 in the Convention Area. The United States described for the Committee the procedures used during the inspection, noting the marginal weather at the time and

the difficulties experienced by the inspection team during boarding and disembarkation from the fishing vessel. The United States expressed appreciation for the cooperation received from the captain of the Japanese vessel.

6. In its explanation of the report by the captain of the Japanese vessel inspected by the US, Japan noted the need for inspectors to be able to communicate in the language of the Flag Nation. It was noted that the Inspectors' Dictionary of Questions and Terms, translated into relevant languages, was designed to assist the inspectors in this regard. Japan further noted that translation of the Inspectors Manual into Japanese had not been completed at the time of the inspection, and therefore the vessel had not been fully prepared. At the beginning of April 1990 all relevant documents had been translated and distributed to vessels and the system had now been fully implemented. A copy of the Japanese language version of the Inspectors Manual was tabled.

7. The USSR noted that it had provided information to CCAMLR detailing 118 USSR inspections of its own fishing vessels, using a format required under national regulations. USSR inspectors had been designated and trained to undertake CCAMLR inspections in the 1989/90 season, but had not had the opportunity to inspect vessels of other Members of CCAMLR during the 1989/90 season. USSR intended that the standard CCAMLR reporting format would be used in future Reports of Inspection to CCAMLR. USSR inspections of its own vessels' operations in the Convention Area, undertaken in accordance with the CCAMLR Inspection System, would also be submitted in the CCAMLR format.

ACCESS TO INSPECTION REPORTS

8. The Committee discussed the question of access to Reports of Inspection. It recalled the agreed procedures for processing Reports of Inspection in paragraph 10 of the Committee's Report to CCAMLR-VIII, noting that it had been intended that inspection reports should be passed to the CCAMLR Secretariat for circulation to all Members.

9. The Committee agreed that Reports of Inspection should be made available only to the nominated contact of contracting parties, in accordance with the provisions of principles VIII and IX of the System of Observation and Inspection. The Committee agreed that its reports to the Commission should provide only a summary report in general terms of the past year's inspection activities.

10. Some delegations noted that there may be a need in future, in cases where infringements were alleged, to restrict access to information that might be prejudicial.

REVIEW OF OPERATION OF THE SYSTEM OF INSPECTION

11. The Committee received an oral report from the Executive Secretary concerning arrangements made by the Secretariat since the last meeting and expressed satisfaction with these. The Executive Secretary was asked to investigate the cost savings involved in a centralised supply of the Inspection pennant.

12. Delegations reported on the actions they had taken to implement the system.

13. The Committee recommended that the Dictionary of Questions and Terms, Inspectors Manual, pages 182 to 184, be enlarged by including all four Commission languages, Japanese language translations made available at the meeting, and other translations by fishing nations as they became available to the CCAMLR Secretariat. The meeting agreed that it would be useful if potential inspectors had dictionaries which would enable them to communicate with the fishing vessels of all Members in the Convention Area.

14. The Delegation of Japan circulated an informal paper suggesting draft guidelines for inspections. This was noted but it was agreed that further experience of inspections should be obtained before the Committee embarked on a further evaluation of the system and that in the short term the Committee should give priority to development of a system of scientific observation.

EVALUATION OF THE INSPECTORS MANUAL

15. The meeting agreed that as well as assisting inspectors during inspections, the Inspectors Manual is useful in training potential inspectors and as a means of educating vessel captains about obligations in respect of the Convention. Its form and content were discussed in the light of these uses. It was agreed that there were advantages in keeping the material together in a single volume. The Committee agreed to a revision of the order in which information is presented in the Manual.

OBSERVATION AND OBSERVERS

16. As agreed in its report to CCAMLR-VIII, the Standing Committee discussed elements of a system governing observers and observation. The discussion took account of the reports of the specialised working groups of the Scientific Committee (WG-FSA, paragraphs 86 and 121, and WG-Krill, paragraphs 27 and 73) and of the CCAMLR observer to SCAR XXI, which stressed the value to be derived from the placement of scientific observers on board commercial fishing vessels to facilitate the acquisition of information needed better to understand and more effectively to

manage harvesting in the Convention Area. Members expressed general willingness to cooperate in the development of a CCAMLR system of scientific observations. The Committee agreed that:

- (i) the essential purpose of the observation system would be the gathering and validation of scientific data; and
- (ii) the elaboration of a multilateral system should take account of the fact that extensive bilateral cooperation would be required in arranging placements of observers.

There was discussion of the role of the observer in the event of an apparent infringement by the vessel concerned. There was agreement that the success of an observation system would depend on cooperation between the observer and the vessel crew and that this would depend on separation of the roles of inspector and observer.

17. The Committee requested the CCAMLR Secretariat to produce a draft paper on scientific observation for circulation to Members for comment in the intersessional period. The paper should review information relating to observation gathered during the development of the paper it had prepared for CCAMLR-VI, and should take account of relevant aspects of other systems of scientific observation. It was noted that these systems were for placement of scientific observers on board commercial vessels.

COMPLIANCE WITH CONSERVATION MEASURES IN FORCE

18. USSR reported a violation by a USSR vessel of CCAMLR Conservation Measure 2/III and that appropriate disciplinary action had been taken.

19. It was noted that Members were required under Article XXI (2) of the Convention to submit information on measures taken to ensure compliance with the provisions of the Convention. The EEC informed the Committee that the Community had enacted into its legislation, in accordance with its obligations under CCAMLR, the Conservation Measures adopted by the latter at its 8th Annual Meeting. It confirmed that, in view of the transfer of competence of Member States to the Community in regard to fisheries, these legislative dispositions fulfilled the obligations of those Member States of the Community which are Members of CCAMLR in regard to compliance with Conservation Measures.