

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 *Champscephalus 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.