

REPORT OF THE SCIENTIFIC COMMITTEE

41. The Chairman of the Scientific Committee introduced the Report (SC-CAMLR-VIII) and drew attention to matters requiring special attention of the Commission.

42. The Commission noted that the Scientific Committee and its working groups, and especially the Working Group on Fish Stock Assessment (WG-FSA), had made numerous recommendations and requests and reported extensive discussions concerning acquisition of data and adoption of measures designed to further the conservation and management policies of the Commission. Discussion of topics that had a bearing on the formulation of specific Conservation Measures was deferred to agenda item 8.

Krill

43. The Commission noted that the Krill CPUE Workshop had successfully brought to conclusion, a study funded by the Commission and undertaken over the past three years.

44. The Commission endorsed decisions of the Scientific Committee that:

- (a) the Working Group on Krill (WG-Krill) should hold an intersessional meeting during 1989/90 in order to develop its tasks further and in order to sustain the momentum achieved at its first meeting;
- (b) fine-scale catch data should be reported for all of Subareas 48.1, 48.2 and 48.3. Collection of such data in other areas where commercial fishing is undertaken, should be encouraged;
- (c) haul-by-haul catch and effort data including the relevant operational details should be collected and prepared pending discussion at the WG-Krill on specific analyses to be performed;
- (d) the above analytical procedures should be conducted on a trial basis and reviewed after three years; and

- (e) acoustic data should be used to better determine swarm size, number of swarms per unit area of concentration and inter-swarm distance within concentrations.

The Commission endorsed these recommendations noting that further examination of bridge log data would be undertaken at the next meeting of the WG-Krill.

45. The Commission endorsed the recommendation of the Scientific Committee to sample krill hauls to obtain length frequency data. As an interim measure, length samples of at least 50 krill from one haul per day per vessel should be taken by all commercial vessels. Where possible, more than one sample should be taken from each haul in order to provide estimates of variance. The standard length measurement to be used should be from the front of eye to the tip of the telson. Members are urged to report any difficulties experienced with the above sampling procedure as well as on the procedures they are currently using or intending to carry out with respect to sampling krill catch length distributions (e.g. using observers aboard single commercial vessels to record length frequencies from all catches in one area). As far as possible, Members are also urged to collect krill length frequency data from commercial and scientific catches in the same area.

46. The Commission noted that some Members of the Scientific Committee felt it was now appropriate for the Commission to consider the implications of imposing a precautionary limit on the krill catch in Subarea 48.3. It also noted that other Members of the Scientific Committee expressed doubts about this view.

47. It was emphasised in the Commission's discussion of this issue that there was insufficient scientific information about the effect of krill catches in Subarea 48.3 on dependent predators and its effect in taking young fish as a by-catch.

48. Two lines of argument were presented:

The first pointed to the following factors:

- the absence of information as to the effects of krill catches on predators and young fish;
- the indications that krill caught in Subarea 48.3 were not part of the spawning stock;
- the relatively small catches of krill taken when compared to the very large stock of krill.

49. The second line of argument was that the degree of uncertainty about the effect of krill catches, coupled with the possibility that a continuation of and an increase in fishing for krill in

Subarea 48.3 might have serious long-term consequences for the krill fishery, meant that the Commission should consider the implications of possible limits on krill catches in that subarea. Such a consideration should include the following elements:

- the possible economic impact on states undertaking harvesting of krill and which may be contemplating an expansion of their involvement in the fishery;
- the implications that the fishing effort could be deployed to other areas of even greater scientific uncertainty;
- the nature and duration of the different kinds of limits that might be agreed.

50. It was suggested that the Commission should consider the above issues and ask the advice of the Scientific Committee on the following questions:

- (a) What is the biomass and potential yield of krill in Subarea 48.3?
- (b) What are the possible management measures, including limits, that might be necessary on krill catches in that subarea which would maintain ecological relationships with dependent and related populations, including:
 - (i) the protection of dependent predators; and
 - (ii) the protection of young and larval fish?
- (c) If these questions cannot be answered, what new information is required and how soon could it be obtained?

Fish Resources

51. The Commission recalled its decision taken at the Fifth Meeting concerning Scientific Research Exemptions (CCAMLR-V, paragraph 60) repeated here for ease of reference:

- (c) any Member planning to use commercial fishing or fishery support vessels to conduct fishing for research purposes in closed areas or seasons, or likely to involve the catching of protected species or size classes, or the use of prohibited gear or fishing techniques, shall notify and provide the opportunity for other Members to review and comment on their research plans. Except in unusual circumstances, plans for such

research shall be provided to the Secretariat for distribution to Members at least six months in advance of the planned starting date.

- (d) such plans for research fishing using commercial fishing or fishery support vessels shall include:
- (i) a statement of the planned research objectives;
 - (ii) a description of when, where, and what activities are planned including the number and duration of hauls being planned;
 - (iii) the name(s) of the chief scientist(s) responsible for planning and coordinating the research, and the number of scientists and crew expected to be aboard the vessel(s); and
 - (iv) the name, type, size, registration number, and radio call sign of the vessel(s); and
- (e) a summary of the results of such research fishing shall be provided to the Scientific Committee no later than 30 September of the split-year following completion of the cruise. A full report shall be provided as soon as possible.'

It also endorsed the following additional requirements recommended by the Scientific Committee:

- (a) catches should be reported on a haul-by-haul basis to the Secretariat; and
- (b) research vessel catches should be considered as part of TAC.

52. The Commission shared the Scientific Committee's concern over the development of a longline fishery in the Convention Area. The recommendation of the Scientific Committee requiring the submission of all past and current catch and effort data from this fishery was endorsed. It was noted that a format for submission of such data had been adopted and that the effort indices required are:

- Number and size of hooks on the line;
- The spacing of hooks on the line;
- The time the logline is set (soak time) and recovered;
- Fishing depth;
- Type of bait;
- Precise fishing location (i.e. position) as suitable sites often cover a very restricted area;

and that the following information would be included:

- Target species and catch;
- Discarded species and catch; and
- Incidental mortality, of seabirds and marine mammals.

53. The responses from the WG-FSA to questions raised by the Commission at the last meeting (CCAMLR-VII, paragraphs 114 to 116) were noted. With regard to the points raised by the Scientific Committee in relation to these responses, the Commission requested the USSR Delegation to submit information on its measures to minimise and assess the level of larval and young fish caught during krill fishing activities which were reported as having been in place for the last four years.

Squid

54. The Commission noted that exploratory fishing for squid had been undertaken by a Member in 1988/89 and that a non-member country had also made catches within the Convention Area. It was agreed that ways of obtaining data from non-member nations should be taken up by the Secretariat and then at the next meeting of the Commission.

55. The Commission agreed that fine-scale catch and effort data from squid fishing operations in the Convention Area should be submitted to the Commission. It was also suggested that the Secretariat should, in consultation with Members most experienced in the analysis of data and the mechanics of squid jigging operations, develop a format for reporting squid jigging catch and effort data.

Ecosystem Monitoring and Management

56. It was noted that the Working Group for the CCAMLR Ecosystem Monitoring Program (WG-CEMP) had revised the data collection section of all existing standard methods sheets in the CCAMLR Booklet 'Standard Methods for Monitoring Parameters of Predator Species' (SC-CAMLR-VIII, paragraph 5.9). The revised methods sheets will be circulated to Members by 1 December 1989. In order that these revised data collection methods can be utilised in CEMP filed studies during the 1989/90 austral summer, Members were requested to ensure that the revised methods are distributed to the scientists in their countries who are conducting CEMP studies.

57. The Commission agreed that once data submission protocols are completed, Members monitoring approved parameters of selected species at nominated sites using approved standard methods should submit these data to the Secretariat annually by 30 September. Where retrospective data, conforming to the same criteria, exist these should also be submitted as soon as possible.

58. The Scientific Committee had discussed the need for fine-scale krill data in connection with the Ecosystem Monitoring Program. The requirement for haul-by-haul data in CEMP Integrated Study Regions was taken into account by the Commission in endorsing the Scientific Committee's recommendations in paragraph 44 above.

59. The Commission supported the Scientific Committee's request for Members to synthesise data on population size, diet and energy budgets of predators in order to provide estimates of krill requirements of predators in Integrated Study Regions, at least during their breeding seasons (SC-CAMLR-VIII, Annex 7, paragraphs 91 and 92).

60. The Commission endorsed the decision of the Scientific Committee that the WG-CEMP should hold an intersessional meeting in 1990 in association with the meeting of the WG-Krill (SC-CAMLR-VIII, paragraph 5.46).

Registration and Protection of CEMP Land-Based Sites

61. Recognising that the results of long-term monitoring activities at CEMP land-based sites can be affected by certain forms of human interference, the Scientific Committee recommended that these sites receive statutory conservation protection as a matter of priority (SC-CAMLR-VII, paragraphs 5.19 and 5.20; SC-CAMLR-VIII, paragraph 5.5). The Commission did not have time to consider a detailed procedure for the proposal, registration and management of land-based CEMP sites and asked the Executive Secretary to prepare a paper for consideration at the next meeting.

Data Collection and Reporting

62. The Commission discussed the many references to data collection and reporting contained in the Report of the Scientific Committee and the Report of the Working Group on Fish Stock Assessment. It noted that some of the recommendations had been endorsed in dealing with particular species in particular areas. These are recorded in other sections of this report.

63. The following list includes other recommendations and requests of the Scientific Committee relating to data collection and reporting endorsed by the Commission:

- (a) In order to avoid confusion, the Secretariat should take steps to ensure that the target species involved in the myctophids' fishery in Subarea 48.3 is identified in future reporting of catch statistics to the Commission.
- (b) Current methods for the analysis of biomass survey data use areas of seabed within small geographical areas stratified by depth range. The strata currently used were obtained for a purpose slightly different from that of the WG-FSA. The procedure of defining strata should be re-assessed in the light of the Working Group's requirements. These should include CCAMLR fine-scale reporting areas and 50 m depth contours down to 500 m where possible.
- (c) The WG-FSA noted that there were some instances where catch data currently available in the CCAMLR database were inconsistent with those available to, or held by, individual Members (e.g. SC-CAMLR-VIII, Annex 6, paragraph 66 (ii)). It was therefore recommended that Members should make every effort to ensure adequate validation of and consistency in data submitted to the Secretariat and to other organisations.
- (d) Length compositions and age compositions from recent catches of *Notothenia rossii* from Subarea 48.3 should be submitted to the Commission.
- (e) Concerning predation of *N. rossii* by *Arctocephalus gazella* (Antarctic fur seals), it was suggested that if the feeding habits of Antarctic fur seals were monitored, details of species and ages of fish prey consumed would be of interest to the WG-FSA. The SCAR Group of Specialists on Seals should be requested to provide advice on the most effective ways of obtaining quantitative information to address this problem.
- (f) In view of the low level at which the stock of *N. rossii* in Subarea 48.3 has been for a number of years, its status needs to be carefully monitored. Biomass estimates and age/length keys from recent years are available from research vessels surveys. However, there is a lack of data from the commercial fishery. Although its annual catch has been comparatively small after the adoption of Conservation Measures by the Commission, biological information (length composition, age/length keys) should be collected and provided to assist in assessing the present status of the stock.

- (g) Due to the catch restrictions likely to be imposed on other species in Subarea 48.3, *Notothenia squamifrons* may be of growing interest to the fishery in the near future. Information on length and age from historical and current commercial catches as well as biomass estimates from research vessel surveys are urgently needed to assess the status of this stock.
- (h) To provide improved assessments of both stocks, *Champsoccephalus gunnari* and *Notothenia gibberifrons* in Subarea 48.2, length and age data from the catches since the mid 1980's are needed. An estimate of current stock biomass from a research vessel survey is also highly desirable.
- (i) To improve assessment of the stock of *N. gibberifrons* in Subarea 48.1, age and length data from the recent catches are needed. A research vessel survey to provide a current biomass estimate is also desirable.
- (j) The reporting of catches of *Pleuragramma antarcticum* in Subarea 58.4 is still not sufficiently detailed to establish where such catches are taken and whether these are from one or more stocks. Both fine-scale reporting and analysis of catch levels is required to establish the distribution of *P. antarcticum* stocks in Subarea 58.4 as a whole. Some reported catches in 1985 and 1986 indicate possible commencement of a fishery for the species but available data are insufficient to assess stocks. Catch levels since 1987 have, however, been low.
- (k) Some historical and recent data on *N. squamifrons* have been submitted by the USSR giving length frequencies, age/length keys and age compositions separately for Ob and Lena Banks. The USSR also reported in their Member's Activities Report the results of trawl surveys which gave biomass estimates of 21.25 ± 11.44 and 12.76 ± 4.34 thousand tonnes for Ob and Lena Banks respectively. Basic survey data and details of the survey design should be made available for consideration and analysis at the meeting of the WG-FSA in 1990.
- (l) The WG-FSA drew attention to the increases in catches of *N. squamifrons* in Division 58.4.4 over the last two seasons. Lacking an assessment the WG-FSA was unable to give specific management advice. The submission of the recent survey data and historical catch data is recommended in order to carry out the necessary assessment at next year's meeting.

- (m) With regard to *C. gunnari* in Division 58.5.1, a further survey is recommended for 1990 to assess the strength of the incoming cohort. This should be carefully designed to take into account the information now available on the distribution of the stock over the shelf area. Further re-analysis of the 1988 survey, with fine-scale stratification using density concentration information is recommended. Studies on the spawning grounds are recommended to help determine whether this species is subject to high post-spawning mortality. Age/length keys and length frequency data from catches prior to 1980 are required for full stock assessment.

- (n) In order to improve assessments of the stock of *N. squamifrons* in Division 58.5.1, including trends in exploitation, it is critically important that the following data be submitted to CCAMLR:
 - (i) length frequency and age/length data for the *N. squamifrons* fishery in Division 58.5.1 from 1972 to the present. Such data should be provided for individual years as far as possible;
 - (ii) catch data prior to the declaration of an EEZ around Kerguelen by France (3 February 1978) should be separated for Division 58.5.1 (as done in WG-FSA-89/16 and 17) and re-submitted;
 - (iii) consolidate the catch data for Subarea 58.5. In particular, care should be taken to ensure consistency between the data submitted to CCAMLR and data available to or held by individual Members; and
 - (iv) all length data should be reported as total length only so as to avoid possible confusion in the future.

- (o) Additional data on all exploited stocks of channichthyids in Statistical Area 58 as a whole are still required urgently for assessment purposes. Such data should be submitted to and considered at the next meeting of the WG-FSA.

Access to and Use of CCAMLR Data

64. In response to the Scientific Committee's request (SC-CAMLR-VIII, paragraph 13.2) that the policy pertaining to the access and use of CCAMLR data and documents be clarified, the Commission decided as follows:

- (a) All data submitted to the CCAMLR Data Centre should be freely available to Members for analysis and preparation of papers for use within the CCAMLR Commission, Scientific Committee and their subsidiary bodies.
- (b) The originators/owners of the data should retain control over any use of their unpublished data outside of CCAMLR.
- (c) When Members request access to data for the purpose of undertaking analyses or preparing papers to be considered by future meetings of CCAMLR bodies, the Secretariat should supply the data and inform the originators/owners of the data. When data are requested for other purposes, the Secretariat will, in response to a detailed request, supply the data only after permission has been given by the originators/owners of the data.
- (d) Data contained in papers prepared for meetings of the Commission, Scientific Committee, and their subsidiary bodies should not be cited or used in the preparation of papers to be published outside of CCAMLR without the permission of the originators/owners of the data. Furthermore, because inclusion of papers in the 'Selected Scientific Papers' series or any other of the Commission's or Scientific Committee's publications, constitutes formal publication, written permission to publish papers prepared for meetings of the Commission, Scientific Committee and Working Groups should be obtained from the originators/owners of the data and authors of papers.
- (e) The following statement should be placed on the cover page of all unpublished working papers and background documents tabled:

This paper is presented for consideration by CCAMLR and may contain unpublished data, analyses, and/or conclusions subject to change. Data contained in this paper should not be cited or used for purposes other than the work of the CCAMLR Commission, Scientific Committee or their subsidiary bodies without the permission of the originators/owners of the data.