SCIENTIFIC COMMITTEE

4.1 The Chair of the Scientific Committee, Dr R. Holt (USA) presented the report of the Scientific Committee (SC-CAMLR-XXI). The Commission noted the general recommendations, advice, research and data requirements of the Scientific Committee. Substantive matters arising from the deliberations of the Scientific Committee were discussed under other parts of the Commission's agenda: CCAMLR Scheme of International Scientific Observation (section 5); incidental mortality and marine debris (section 6); IUU fishing (section 8); new and exploratory fisheries (section 9); management under uncertainty (section 12); and cooperation with other international organisations (section 14). The Commission thanked Dr Holt for his comprehensive report.

4.2 The Commission also congratulated Dr Holt on his unanimous re-election to the Chair of the Scientific Committee for a second term starting at the conclusion of this year's meeting.

Intersessional Activities

4.3 The following meetings were held during the 2001/02 intersessional period:

- The eighth meeting of the Working Group on Ecosystem Monitoring and Management (WG-EMM) was held from 5 to 16 August 2002 in Big Sky, Montana, USA. It was convened by Dr R. Hewitt (USA) and was attended by 39 participants, representing 11 Members.

- The Interim Steering Committee for the Review of CEMP met in Big Sky on 3 August 2002 immediately prior to the WG-EMM meeting. It was convened by Prof. J. Croxall (UK).

- The Workshop on Small-scale Management Units, such as Predator Units (SSMU Workshop), was held from 7 to 15 August 2002 in conjunction with the WG-EMM meeting. It was convened by Dr W. Trivelpiece (USA).

- The meeting of the Working Group on Fish Stock Assessment (WG-FSA) was held from 7 to 17 October 2002 in Hobart prior to the Scientific Committee meeting. It was convened by Dr I. Everson (UK).

- The ad Hoc Working Group on Incidental Mortality Arising from Fishing (WG-IMAF) conducted its meeting as part of WG-FSA. It was convened by Prof. Croxall.

The Commission joined the Scientific Committee in thanking the conveners of these working groups and workshops for their contributions to the work of CCAMLR.

Ecosystem Monitoring and Management

Feedback Management Scheme for Krill

4.4 The Commission noted the progress which the Scientific Committee and WG-EMM had made towards the development of a feedback management scheme for krill, and in particular:

(i) the delineation of small-scale management units (SSMUs) for the krill fishery in Area 48 (SC-CAMLR-XXI, paragraph 3.4);

(ii) the continuing work on the subdivision of large CCAMLR statistical areas into ecologically-based harvesting units, which may be further defined as those areas over which CCAMLR conservation objectives, will need to be achieved (SC-CAMLR-XXI, paragraph 3.15); and

(iii) the elaboration of a long-term work plan which included the review of CEMP to be conducted during the 2003 meeting of WG-EMM (SC-CAMLR-XXI, paragraph 3.4).

4.5 The Commission endorsed the delineation of SSMUs proposed by the Scientific Committee, namely:

(i) Subarea 48.1
  (a) 48.1 Pelagic Area
  (b) 48.1 Land-based Predator Area
    (i) Western Antarctic Peninsula
    (ii) Drake Passage
      1. West
      2. East
    (iii) Bransfield Strait
      1. West
      2. East
    (iv) Elephant Island

(ii) Subarea 48.2
  (a) 48.2 Pelagic Area
  (b) 48.2 Land-based Predator Area
    (i) West South Orkney
    (ii) East South Orkney
      1. North
      2. South

(iii) Subarea 48.3
  (a) 48.3 Pelagic Area
  (b) 48.3 Land-based Predator Area
    (i) West South Georgia
    (ii) East South Georgia.

4.6 The Commission agreed that these units be used as a basis on which to subdivide the precautionary catch limit for krill in Area 48. It was noted that the Scientific Committee will

undertake this task as part of its long-term work plan (SC-CAMLR-XXI, paragraph 3.20 and Table 1).

4.7 The Commission also agreed that these units may be useful in developing management procedures for krill fisheries that can adequately account for localised effects on krill predators.

4.8 The Commission noted that:

(i) this assessment is the first of its kind in CCAMLR;

(ii) this assessment used a variety of datasets that enabled the detailed analyses presented here, such that deficiencies in one dataset could be compensated by strengths in others;

(iii) fine-scale fisheries data were very important to the success of this assessment;

(iv) a number of uncertainties remain regarding the relationships between predators, krill and the fishery and further information on krill, krill movement, predator demand and predator foraging grounds may provide opportunities to refine these boundaries in the future;

(v) the next step is to develop an understanding of the linkages and dynamics between these areas in order to facilitate the subdivision of the precautionary catch limit for krill in Area 48, taking account of the oceanography and the environmental variability of the region;

(vi) this assessment has demonstrated the utility of satellite-tagging programs for an understanding of the relationships between predators, krill and the fishery, and, as a result, the SSMU workshop highly recommended further studies of this kind; and

(vii) the manner in which these proposed SSMUs are used may have implications for monitoring that would need to be considered by the Commission.

4.9 The Commission agreed that:

(i) the subdivisions described in the maps (SC-CAMLR-XXI, Figures 1 to 3) be considered the best available advice on SSMUs in the region;

(ii) refinements to the boundaries may be required over time to fully meet the requirements of the Commission and that such proposals be considered as they arise;

(iii) submission of haul-by-haul krill fishery data is necessary for future assessments of activities in these units; and

(iv) consideration be given to using the proposed SSMUs as an alternative structure to the Integrated Study Areas for organising future work on the relationships between krill, krill predators and the fishery.

4.10 The Commission noted the extreme difficulty of predicting trends in the krill fishery given the absence of reliable information and reaffirmed the need for detailed data on catch and effort for the krill fishery.

Management of Protected Areas

4.11 The Commission noted CEP's agreement, on an interim basis at least, on the coordinated procedure to be followed by CEP and CCAMLR when considering proposals for Marine Protected Areas (MPAs) (CCAMLR-XXI/BG/15).

4.12 The Commission noted the following procedure agreed by CEP for forwarding draft Management Plans for Antarctic Specially Protected Areas (ASPAs) and Antarctic Specially Managed Areas to CCAMLR (see also paragraph 13.2(ii)), namely:

> 'When a draft management plan for a new protected area with any marine component is submitted, the proponent should at the same time submit this to CCAMLR through its Executive Secretary.
>
> The proponent may, in addition, make a judgment and propose whether the marine area component is such that it falls under the definition quoted above, but it is recognised that CCAMLR will make its own judgment on this issue. The CEP Chair should also submit the plan to CCAMLR with any additional information on how the CEP process will be conducted.
>
> The same procedure will be followed where there is a revision of the marine area in existing management plans.'

4.13 Norway drew to the attention of the Commission that, according to the procedures adopted, a potential conflict may arise between the opinion of a proposal's proponent and that of the CEP Chair.

4.14 The Commission noted that on 24 May 2002, Annex V of the Protocol on the Environmental Protection came into force. As a result, management plans of four protected areas with marine components were forwarded to CCAMLR for review. Three of the sites had already been afforded protection as Sites of Special Scientific Interest (SSSIs) under the Antarctic Treaty. These were SSSI Nos. 1, 35 and 36. The fourth site proposed was a new protected area in Terra Nova Bay, Ross Sea.

4.15 The Commission approved the four management plans for protected sites containing marine areas that sought protection as ASPAs under the Antarctic Treaty. These included SSSI No. 36 (Eastern Dallman Bay, WG-EMM-02/57), SSSI No. 35 (Western Bransfield Strait, WG-EMM-02/58), SSSI No. 1 (Cape Royds, WG-EMM-02/59), and a revised plan for a proposed new protected area under the Antarctic Treaty (Terra Nova Bay, WG-EMM-02/56). In addition, the Commission agreed to transmit recommendations for improvements to the originators of the four plans.

4.16 The Commission commended Italy for bringing forward the Terra Nova Bay proposal. This was the first time that the procedures agreed between the ATCM and CCAMLR on protected areas with marine components had been fully implemented.

4.17 The Commission endorsed the new name and future tasks of the WG-EMM subgroup 'Advisory Subgroup on Protected Areas' (SC-CAMLR-XXI, paragraph 3.32(iii)).

4.18 The Commission noted that Australia had recently proclaimed the Heard Island and McDonald Islands (HIMI) Marine Reserve and Conservation Zone (SC-CAMLR-XXI, paragraphs 3.33 to 3.36).

4.19 The Commission recalled that the recent World Summit on Sustainable Development (WSSD) had recommended that management of the oceans should take into account relevant international instruments to develop and facilitate the use of diverse approaches, in particular, for the establishment of marine protected areas consistent with international law and based on scientific information (CCAMLR-XXI/BG/35).

4.20 The Commission agreed that the topic of management of protected areas should form a separate agenda item at its future meetings.

Future Work

4.21 The Commission endorsed the future work in ecosystem monitoring and management (SC-CAMLR-XXI, paragraphs 3.23 to 3.30), including the long-range work plan of WG-EMM (SC-CAMLR-XXI, paragraph 3.29). This plan includes a Workshop on the Review of CEMP which will be held during the 2003 meeting of WG-EMM (SC-CAMLR-XXI, paragraph 3.23).

Harvested Species

4.22 CCAMLR Members actively participated in eight fisheries under conservation measures in force during the 2001/02 season (1 December 2001 to 30 November 2002):

- longline fishery for toothfish (*Dissostichus eleginoides*) in Subarea 48.3;
- trawl fishery for toothfish (*D. eleginoides*) in Division 58.5.2;
- exploratory longline fishery for toothfish (*Dissostichus* spp.) in Subarea 88.1 (north and south of 65°S);
- exploratory longline fishery for toothfish (*Dissostichus* spp.) in Subarea 88.2;
- pot fishery for crabs in Subarea 48.3;
- trawl fishery for icefish (*Champsocephalus gunnari*) in Subarea 48.3;
- trawl fishery for icefish (*C. gunnari*) in Division 58.5.2; and
- trawl fishery for krill (*Euphausia superba*) in Area 48.

4.23 Thirteen Member countries fished in these fisheries: Australia, Chile, Japan, Republic of Korea, New Zealand, Poland, Russia, South Africa, Spain, Ukraine, UK, Uruguay and the USA.

4.24 In addition, five other fisheries were undertaken in EEZs within the Convention Area:

- trawl fishery for *D. eleginoides* in Division 58.5.1 (French EEZ);
- longline fishery for *D. eleginoides* in Division 58.5.1 (French EEZ);
- longline fishery for *D. eleginoides* in Subarea 58.6 (French EEZ);
- longline fishery for *D. eleginoides* in Subarea 58.6 (South African EEZ); and
- longline fishery for *D. eleginoides* in Subarea 58.7 (South African EEZ).

Krill Fishing

4.25 A total of 118 705 tonnes of krill was caught during the 2001/02 season (up to 18 October 2002). The catch was taken by Japan, Republic of Korea, Poland, Ukraine and the USA. All of the catch came from Area 48.

4.26 The 2001/02 total catch to date represents an increase from the 93 572 tonnes caught in the previous season, although this increase is not as great as the forecast indicated by the fishing plans presented to the Scientific Committee last year (SC-CAMLR-XX, paragraph 2.7). The same five nations participated in the fishery in both years.

4.27 The Commission noted that:

- the information provided from the fishing nations on their future plans is generally less accurate than is necessary to indicate future trends in the krill fishery (SC-CAMLR-XXI, paragraph 4.7);

- the interpretation of CPUE data from the krill fishery would not be possible without additional information on factors such as vessel type and product type, and that data submission on these parameters should be sought (SC-CAMLR-XXI, paragraph 4.8);

- the voluntary submission of CPUE and associated data makes the krill fishery unique amongst CCAMLR fisheries which otherwise require mandatory submission of detailed catch and effort data (SC-CAMLR-XXI, paragraph 4.8);

- it was important to identify the market factors critical to the krill fishery and to evaluate how these might be monitored to assess the development potential of the fishery (SC-CAMLR-XXI, paragraph 4.11);

- a shorter reporting interval than the current monthly reporting of catches would be required to avoid a potential 30% over-run in forecasting the closure of the fishery (SC-CAMLR-XXI, paragraph 4.12);

- the subdivision of the precautionary catch limit of krill in Area 48 into SSMUs will require a greater degree of fine-scale reporting than currently required (SC-CAMLR-XXI, paragraph 4.15); and

- the consistency and timeliness of data reporting was deteriorating. The low level of data submission and the timing of those submissions meant that important relevant aspects of the work of the Scientific Committee were not able to proceed (SC-CAMLR-XXI, paragraph 4.16).

4.28 The Commission also noted that the Scientific Committee had compelling reasons for requiring detailed data for krill fisheries (SC-CAMLR-XXI, paragraph 4.22).

4.29 The Commission agreed that the current reporting requirement of monthly catch data by FAO statistical area be maintained (SC-CAMLR-XXI, paragraph 4.24).

4.30 In addition, the Commission agreed that catch and effort data aggregated over 10 x 10 n mile squares and by 10-day periods be reported for the entire fishing season no later than 1 April of the following year (SC-CAMLR-XXI, paragraph 4.25).

4.31 The Commission also noted that the Scientific Committee had recommended that when the precautionary catch limit for krill in Area 48 is subdivided among SSMUs, reporting of haul-by-haul data by 10-day periods would be required (SC-CAMLR-XXI, paragraph 4.27).

4.32 The Scientific Committee had demonstrated the utility of haul-by-haul data for its work when describing krill fishing grounds in support of the definition of SSMUs in Area 48 (SC-CAMLR-XXI, paragraphs 3.18 and 3.19). In addition, the Scientific Committee had indicated that the subdivision of the precautionary catch limit in Area 48 would require a greater degree of fine-scale reporting than currently required (SC-CAMLR-XXI, paragraph 4.15).

4.33 The Commission noted that the data being requested by the Scientific Committee was required for two purposes: forecasting the closure of the fishery and furthering the work of the Scientific Committee. The data reporting requirements for these two purposes may not be the same. Therefore, the Commission requested the Scientific Committee to indicate the type of information that will be required for each of these requirements when the precautionary catch limit in Area 48 is subdivided among SSMUs.

Fish Resources

4.34 The Commission noted that fisheries conducted in the Convention Area during the 2001/02 season to 18 October 2002 had caught a total of 12 817 tonnes of *Dissostichus* spp. (SC-CAMLR-XXI, Table 2): 5 618 tonnes in Subarea 48.3, 2 930 tonnes in Division 58.5.1 in the French EEZ, 1 812 tonnes in Division 58.5.2, 989 tonnes in Subarea 58.6 in the French EEZ, 57 tonnes in Subarea 58.6 in the South African EEZ, 37 tonnes in Subarea 58.7 in the South African EEZ, 1 333 tonnes in Subarea 88.1 (including 1 275 tonnes south of 65°S), and 41 tonnes in Subarea 88.2. In comparison, 13 725 tonnes had been reported in the previous season (SC-CAMLR-XXI, Table 3).

4.35 The Commission also noted that fisheries conducted in the Convention Area during the 2001/02 season had caught a total of 3 506 tonnes of *C. gunnari* up to 18 October 2002 (SC-CAMLR-XXI, Table 2): 2 656 tonnes in Subarea 48.3 and 850 tonnes in

Division 58.5.2. In comparison, a total of 2 559 tonnes of *C. gunnari* had been reported in the previous season (SC-CAMLR-XXI, Table 3).

4.36 The Commission noted that assessments made in 2002 followed the procedures established by the Scientific Committee and WG-FSA.

4.37 With regard to the recruitment estimates used in the assessment of *D. eleginoides* in Subarea 48.3, Argentina inquired why the results of the Russian bottom trawl survey in Subarea 48.3 in 2002 had not been used (SC-CAMLR-XXI, Annex 5, paragraph 5.60) to update the recruitment series.

4.38 The Commission noted that the use of acoustic data in assessing stocks of *C. gunnari* had been further developed at a workshop held jointly by Russia and the UK in 2002 (SC-CAMLR-XXI, paragraphs 4.81 and 4.82). Further work was scheduled in 2003, and results of that work would be presented to the Scientific Committee and WG-FSA next year (SC-CAMLR-XXI, paragraph 4.83).

4.39 The Commission noted with concern that recent surveys in Subareas 48.1 and 48.2 had found that some stocks of fish remained depleted. Some of those populations have been depleted since before the ratification of the Convention (i.e. more than two decades as identified in Article II, paragraph 3c). The Commission encouraged the Scientific Committee to further consider the ecological processes which may maintain fish stocks at historically low levels of abundance in the absence of fishing.

4.40 The Commission endorsed the management advice provided by the Scientific Committee for both target species and by-catch species of finfish (see section 11).

Crab Resources

4.41 In the 2001/02 season a single Japanese-flagged vessel undertook commercial pot fishing for crabs in Subarea 48.3. The fishery targeted two species, *Paralomis spinosissima* and *P. formosa*, in accordance with Conservation Measure 225/XX. The vessel conducted fishery-based research in accordance with Conservation Measure 226/XX and Annex 226/A. The total catches were 56 and 57 tonnes of *P. spinosissima* and *P. formosa* respectively.

4.42 The Commission endorsed the management advice provided by the Scientific Committee for crab (see section 11).

Squid Resources

4.43 The Commission noted that fishing for *Martialia hyadesi* in the Convention Area did not take place in the 2001/02 season and no notification had been made for the 2002/03 season (SC-CAMLR-XXI, paragraph 4.121).

4.44 The Commission endorsed the management advice provided by the Scientific Committee for squid (see section 11).

Future Work

4.45 The Commission endorsed the future work of the Scientific Committee and WG-FSA in the assessment and management of harvested species, including the following key tasks:

- the development of background documents on the biology and demography of target species in the form of species profiles (SC-CAMLR-XXI, paragraph 4.42);
- further intersessional work planned on estimating the age of icefish from otoliths (SC-CAMLR-XXI, paragraph 4.43); and
- the work of WG-FSA's Subgroup on Assessment Methods including the development of a background document to describe the development and use of assessment methods employed by WG-FSA (SC-CAMLR-XXI, paragraph 4.44).

4.46 The Commission recognised the need to consider alternative existing or new assessment methods. To this end, WG-FSA's Subgroup on Assessment Methods would evaluate alternative methods and identify those which met the management decision rules established by CCAMLR, including consideration of uncertainties.

4.47 The Commission also agreed that the Secretariat continue to estimate future catches to predict closure dates of fisheries in the Convention Area, but that in applying the method it should incorporate information available to it on future vessel movements into its estimation of future effort on a trial basis. This will increase the accuracy of the prediction of closure dates, which in turn should reduce the level of under- or over-shoot of the catch limit (SC-CAMLR-XXI, paragraph 4.98).

Scientific Research Exemption

4.48 Last year, the Scientific Committee sought advice from the Commission on the minimum level of expected catch which required notification under Conservation Measure 64/XIX (SC-CAMLR-XX, paragraph 8.2). Some Members felt that, in general, surveys which only used small scientific sampling equipment (e.g. RMT) need not be required to notify under this measure. In turn, the Commission referred the matter of a minimum catch level back to the Scientific Committee (CCAMLR-XX, paragraph 4.31).

4.49 The Commission noted that the intention of Conservation Measure 64/XIX was to:

- allow catches taken for research purposes to be considered as part of any catch limits in force for each species taken; and
- provide the opportunity for other Members to review and comment on substantial research plans (i.e. catches greater than 50 tonnes of finfish or 10 tonnes of *Dissostichus* spp.).

4.50 In 2000 the Commission adopted a revision to this measure (64/XIX) which:

- limited notifications to those surveys where finfish were expected to be taken; and
- introduced specific notification requirements with respect to *Dissostichus* spp.

4.51 The Commission noted that this revision had inadvertently resulted in the exclusion of species such as krill, squid and crab.

4.52 The Commission agreed to alter the language of the measure to better provide for a flexible list of taxa-specific limits to research catches under this measure. In addition, the Commission requested the Scientific Committee to revise this list and provide further details on species and limits (see section 11).

Secretariat Supported Activities

4.53 The Commission noted the data management activities of the Secretariat and the key role which the Data Centre played in the work of the Scientific Committee and its working groups (SC-CAMLR-XXI, paragraphs 12.1 to 12.7).

4.54 The Commission also noted that one of the Data Centre's main functions was the monitoring of fisheries conducted under conservation measures in force. The requirement for Members to notify the Secretariat of the movements of their vessels into, and out of, subareas and divisions had greatly assisted this monitoring function.

4.55 The Commission reminded all Members to comply with this requirement (Conservation Measure 10-04 (2002), paragraph 4). The Commission noted that the trail forecast method agreed in paragraph 4.43 would not be possible if data on movements of vessels into, and out of, subareas and divisions were incomplete or missing.

4.56 The Commission endorsed the priority items for the work of the Data Centre identified by the Scientific Committee (SC-CAMLR-XXI, Annex 4, paragraphs 6.46 to 6.48 and Annex 5, Table 12.1 and Appendix D).

Publications

4.57 In addition to the annual reports of CCAMLR, the Commission noted that the following documents were also published in 2002:

(i) *CCAMLR Scientific Abstracts* covering abstracts of papers presented in 2001;
(ii) *CCAMLR Science*, Volume 9 (distributed at the meeting);
(iii) *Statistical Bulletin*, Volume 14;
(iv) Revisions to *Inspectors Manual*; and
(v) Revisions to *Scientific Observers Manual.*

4.58 The Commission endorsed the Scientific Committee proposal to provide assistance with the preparation, in English, of manuscripts submitted to *CCAMLR Science* by authors whose native language was not English (SC-CAMLR-XXI, paragraph 12.16).

4.59 The Commission agreed that the following steps should be taken to overcome problems with papers for which English is not the author's primary language, and which may need additional language editing assistance (SC-CAMLR-XXI, paragraph 12.17):

(i) request authors first to write papers in their own language and then subject them to thorough scientific editing within their own scientific community;

(ii) papers should then be translated into the best quality English within the means of the authors;

(iii) both copies of the paper, in the original language and the translation, should be submitted to the Secretariat;

(iv) extra funding should be allocated to the Secretariat to deal with language editing which often includes retranslation into English of some sections of the original language; and

(v) reviewers of papers should also be requested to assist in further editing and English improvement.

4.60 The Commission agreed to provide the Secretariat with additional funds, of the order of A$12 000 per annum starting in 2004, to provide for additional translation and scientific editing of those manuscripts which required language assistance. This support would extend to all languages of Members.

4.61 The Commission recognised that such support may require additional funding, and it was agreed to keep the level of funding under review.

Scientific Committee Activities

4.62 The Commission endorsed the long-term work plans of the Scientific Committee and its working groups. The Commission noted the following activities of the Scientific Committee which were planned in 2002/03:

- meeting of the WG-FSA Subgroup on Assessment Methods (12 to 15 August 2003, London, UK);
- a fishery acoustic workshop (18 to 22 August 2003, Cambridge, UK);
- meeting of WG-EMM (18 to 29 August 2003, Cambridge, UK);
- CEMP Review workshop (in conjunction with meeting of WG-EMM); and
- meeting of WG-FSA (13 to 23 October 2003, Hobart, Australia).

4.63 The Commission also noted that the Scientific Committee had requested Dr Everson retain the convenership of WG-FSA for another year so that the reorganisation of the work of WG-FSA could be completed under his guidance. The Scientific Committee had also agreed that Dr S. Hanchet (New Zealand) would take up the role of convener of WG-FSA in 2004.

Invitation of Observers to the Next Meeting

4.64 The Commission noted that the Scientific Committee had agreed that all observers invited to SC-CAMLR-XXI would be invited to participate in SC-CAMLR-XXII.

4.65 It was also noted that the Scientific Committee had been unable to reach consensus on the participation of ASOC in the work of its working groups. ASOC's application for participation in the 2003 meetings of the working groups had been rejected.

Data Access Rules

4.66 The Commission noted that the Scientific Committee had reviewed the Rules for Access and Use of CCAMLR Data following comments from WG-EMM and WG-FSA (SC-CAMLR-XXI, paragraph 15.1 and Annex 6). In doing so, a Scientific Committee subgroup had consulted with SCOI.

4.67 The Scientific Committee had developed guidelines for data access (SC-CAMLR-XXI, Annex 6). The guidelines applied to all types of data held by CCAMLR, and to all types of data requests.

4.68 The Commission endorsed the recommendations of the Scientific Committee as outlined in SC-CAMLR-XXI, Annex 6, and agreed that these guidelines should be used by the Secretariat in place of the existing rules until a new set of rules is agreed.

4.69 The Commission requested the Secretariat to develop, as soon as practicable, in consultation with Members, a draft set of rules based on these guidelines. The resulting draft should be circulated to Members for comment prior to submitting a new draft for review by the Commission and Scientific Committee, including its working groups, as soon as possible.

4.70 The Commission also requested the Secretariat to review and report on its procedures for data handling and security, and to further consider the requirements needed to maintain data security when data are circulated outside the Secretariat.