

## SCIENTIFIC COMMITTEE

4.1 The Vice-Chair of the Scientific Committee, Dr K. Sullivan (New Zealand) presented the report of the Scientific Committee (SC-CAMLR-XXVII). The Commission thanked Dr Sullivan for his comprehensive report (CCAMLR-XXVII/BG/51).

4.2 The Commission noted the Scientific Committee's general recommendations, advice, research and data requirements. The Commission also discussed substantive matters arising from the Committee's deliberations under various parts of the Scientific Committee's agenda, including fisheries management and conservation under conditions of uncertainty (section 5); assessment and avoidance of incidental mortality (section 6); illegal, unreported and unregulated (IUU) fishing (section 10); Scheme of International Scientific Observation (section 11); new and exploratory fisheries (section 12); data access and security (section 14); cooperation with other international organisations (section 16); and CCAMLR-IPY activities (section 20).

### Intersessional activities

4.3 The Commission noted the extensive activities of the Scientific Committee in 2008 (SC-CAMLR-XXVII, paragraphs 1.8 and 1.11). It joined the Scientific Committee in thanking the conveners of the working groups, subgroups and workshops for their contributions to the work of CCAMLR.

### CCAMLR Scheme of International Scientific Observation

4.4 CCAMLR-designated scientific observers were deployed on all vessels fishing for finfish in the Convention Area in 2007/08. In addition, scientific observers were deployed on a number of krill fishing vessels under the CCAMLR Scheme of International Scientific Observation. The Scientific Committee's advice on scientific observation is considered in section 11.

### Advances in statistics, assessments and modelling

4.5 The Commission noted progress by the Scientific Committee and the Working Group on Statistics, Assessments and Modelling (WG-SAM) on developing various methodologies for use in the Committee's assessment work (SC-CAMLR-XXVII, paragraphs 2.1 to 2.4). Future developments being pursued include:

- (i) further development and implementation of methodologies to assess data quality (SC-CAMLR-XXVII, Annex 7, paragraph 9.9(i));
- (ii) further development of models aimed at understanding ecosystem dynamics as well as the consequences of management approaches for Antarctic marine living resources (SC-CAMLR-XXVII, Annex 7, paragraph 9.9(ii));

- (iii) revised (version) control systems to facilitate multiple revisions of programming code, documents and data files in the CCAMLR database as part of the Scientific Committee's work (SC-CAMLR-XXVII, Annex 7, paragraph 9.9(iii));
- (iv) development by the Scientific Committee of common terminology, consistent with that of other international fora, for the evaluation of management procedures for use in the Committee's work (SC-CAMLR-XXVII, Annex 7, paragraph 9.9(iv)).

#### Advances in acoustic survey and analysis methods

4.6 The Commission noted that the fourth meeting of the Subgroup on Acoustic Survey and Analysis Methods (SG-ASAM) is to be held in Ancona, Italy, in May 2009. It endorsed the proposed terms of reference and work plan agreed by the Scientific Committee (SC-CAMLR-XXVII, paragraphs 2.5 to 2.9).

#### Joint CCAMLR-IWC Workshop

4.7 The Commission congratulated the Scientific Committee on the outcomes of the Joint CCAMLR-IWC Workshop. The workshop had considered the types of information needed for models on the Antarctic marine ecosystem that could be developed for providing management advice. The Commission noted the program for completion of the workshop's tasks and publication of expert review papers, once the format of such a publication has been decided (SC-CAMLR-XXVII, paragraphs 2.10 to 2.20).

#### Ecosystem monitoring and management

4.8 The Commission noted the progress made by the Scientific Committee and WG-EMM in relation to ecosystem monitoring and management (SC-CAMLR-XXVII, paragraphs 3.1 to 3.49 and Annex 4). This included:

- (i) Stage 1 allocation of the precautionary krill catch limit among SSMUs in Subareas 48.1 to 4.83 (SC-CAMLR-XXVII, paragraphs 3.3 to 3.21);
- (ii) validation and access to models advising on SSMU allocations (SC-CAMLR-XXVII, paragraphs 3.22 to 3.26);
- (iii) allocation subsequent to Stage 1 (SC-CAMLR-XXVII, paragraph 3.27);
- (iv) SSMUs in Subarea 48.4 (SC-CAMLR-XXVII, paragraphs 3.28 and 3.29).

4.9 Detailed advice had been received from WG-EMM by the Scientific Committee on analysis of risk attached to Stage 1 allocation of krill precautionary catch limits (SC-CAMLR-XXVII, paragraphs 3.3 to 3.9). Considerable progress has been made in assessing the relative risks of the different allocation options.

4.10 However, the Commission noted that the Scientific Committee had been unable to reach consensus over this advice (SC-CAMLR-XXVII, paragraphs 3.20 and 3.21) and further work is necessary before calculation of the SSMU allocations can be made (SC-CAMLR-XXVII, paragraphs 3.3 and 3.4). In this regard, the Scientific Committee continues to address the staged approach for subdividing the precautionary catch limit for krill in Area 48 (SC-CAMLR-XXVII, paragraph 3.2).

4.11 The Commission also noted that subdividing the precautionary catch limit for krill in Area 48 among SSMUs would affect the behaviour of the krill fishery under the various scenarios being examined by the Scientific Committee (SC-CAMLR-XXVII, paragraphs 3.6(i), 3.8 and 3.30). Such consequences would potentially become more pronounced as catches increased, thereby limiting the possibility that the fishery will take the total krill precautionary catch limit (Conservation Measures 51-01, 51-02 and 51-03) from the current fishing grounds.

4.12 Following similar remarks in the Scientific Committee, some Members again indicated that, in their view, it is not yet necessary to spatially apportion the precautionary krill catch limit. Therefore, the current catch trigger level of 620 000 tonnes in Conservation Measure 51-01 remains the only way to manage the developing krill fishery in terms of serving as a trigger for apportioning the krill precautionary catch limit (SC-CAMLR-XXVII, paragraph 3.31). However, most Members considered the current trigger level of 620 000 tonnes may not be as precautionary as previously assumed (SC-CAMLR-XXVII, paragraphs 3.32 and 3.33 and Annex 4, paragraph 2.90).

4.13 The Commission also noted various issues raised by the Scientific Committee that the latter considered to be beyond its competency (SC-CAMLR-XXVII, paragraphs 3.30 to 3.34).

4.14 Other items from the Scientific Committee noted by the Commission included:

- (i) the report of WG-EMM-STAPP (Status and Trend Assessment of Predator Populations) (SC-CAMLR-XXVII, paragraphs 3.38 to 3.41);
- (ii) advice on estimating krill  $B_0$  (SC-CAMLR-XXVII, paragraphs 3.42 and 3.43);
- (iii) the revised agenda and long-term work plan for WG-EMM (SC-CAMLR-XXVII, paragraphs 3.45 and 3.49).

4.15 The Commission endorsed the Scientific Committee's proposal to partition Subarea 48.4 into a single coastal and one pelagic SSMU (SC-CAMLR-XXVII, paragraphs 3.28 and 3.29).

4.16 The European Community thanked the Scientific Committee for its report. It expressed concern at the apparent lack of consistency between consensus advice provided by WG-EMM and subsequent discussion in the Scientific Committee, especially where the same delegations participated in both meetings. Noting the progress made by WG-EMM (as mandated by the Commission) on the complex issue of SSMU allocation, the European Community further noted that waiting for 100% certainty on such matters would result in inactivity that amounts to a lack of management action. Furthermore, it suggested that the Commission has a responsibility to act even when consensus advice is not available in order to maintain the CCAMLR tradition of taking pre-emptive management decisions. As one EC

Member State is a krill fishing nation, the European Community wished to ensure that there is clarity on the development of the fishery; a situation that includes a desire to see continued development of the best scientific advice available and the need for the Commission to take appropriate decisions in terms of the Convention's objectives.

4.17 Australia also thanked the Scientific Committee and expressed its disappointment at the lack of clear advice on SSMU allocations. Furthermore, Australia urged the Scientific Committee, through WG-EMM, to continue developing the science for Stage 1 allocation of the precautionary krill catch limit among SSMUs in Subareas 48.1 to 4.83. In Australia's view, such development should go beyond this initial step in order to progress development of a feedback management system for krill which takes into account potential responses to ecosystem changes, arising particularly from changes in sea-ice distribution and ocean acidification (paragraph 15.20). Australia reiterated that even if the Commission had not received specific advice from the Scientific Committee, this should not prevent the Commission acting in a precautionary manner.

4.18 The UK endorsed the European Community's and Australia's comments on the importance and extent of the work undertaken by both WG-EMM and the Scientific Committee. It expressed its concern that most Members recognised that the current krill catch trigger level (paragraph 4.12) might not be as precautionary as previously thought. The UK urged all Members to engage in WG-EMM's work and to develop submissions on the appropriateness of the current krill catch trigger level to WG-EMM's 2009 meeting.

4.19 The USA expressed concern about the Scientific Committee's deliberations this year, noting in particular the lack of consensus at the Committee on many issues where consensus had been reached in the working groups. One reason for this was that many Members did not send appropriate experts to working group meetings. This makes it difficult to complete the work of the Commission. In addition, at the Scientific Committee meeting, some Members who were not represented at the working group level did not accept the results from the working groups. Some Scientific Committee delegations took positions different from those taken by their delegation in the working groups. Thus, scientific advice based on the best available science was rejected, apparently in favour of positions based on instructions from capitals. This means that politics has been inserted into the Scientific Committee's work. This has had a tremendously negative impact on the Commission's efforts. In the USA's view, this development is not in the best interests of CCAMLR. The USA called on Members to send experts to the working groups which will ensure that sufficient scientific input is available to support the Commission's decision-making.

4.20 South Africa stated that it had also provided scientific input into the modelling work associated with the allocation of krill precautionary catch limits to SSMUs. It was therefore concerned that some of the Scientific Committee discussion on this issue was not scientifically based, but appeared to be influenced by political instructions. The consequent inability to provide unbiased scientific advice would erode the Commission's ability to take proactive, rather than reactive, decisions based on the best scientific evidence available, an essential consideration if CCAMLR is to be successful.

4.21 Chile echoed the above views and expressed its great concern that agreement on scientific advice for the krill fishery, taking account of the number of notified intentions to fish for krill and Chile's re-entry into the krill fishery, should be pursued or else the Commission's work will essentially be undermined should the Scientific Committee's advice

not be based solely on science. Furthermore, Chile expressed that the precautionary approach should prevail and under such circumstances political solutions may only then be provided in the absence of scientific advice.

4.22 Japan thanked the previous speakers for their comments. It recognised the concerns expressed and assured the Commission that Japan will continue discussion aimed at fully engaging in the Scientific Committee's scientific activities in the future. Japan also recognised that the ecosystem models being used to provide advice on SSMU krill catch allocation still contain inherent uncertainties and Japan would endeavour to provide scientific input on this subject in future. In response to the question of why Japan had changed its position on its WG-EMM agreement for 100% observer coverage in the krill fishery to its position in the Scientific Committee, Japan noted that it employs national scientific observers in the krill fishery to ensure the quality of scientific observer data, and limitations on the government's finances placed restrictions on the numbers of such observers available. Consequently, Japan could not agree to mandatory 100% observer coverage in the krill fishery. Indeed, Japan was unclear why its proposal for 50% observer coverage presented at WG-EMM had not been accepted by the members of that working group and it welcomed further discussion on this issue (paragraph 11.8).

4.23 The Republic of Korea indicated that it supported a more cautious approach to SSMU krill catch allocation which requires further model development. It noted various Commission comments encouraging Members to facilitate scientific involvement in the various Scientific Committee working groups and that it would convey this information to the Korean Government.

4.24 Ukraine expressed its sincere appreciation to the Scientific Committee for its work. It noted that in its paper (CCAMLR-XXVII/43) it had suggested that there was a need for further research in Area 48 and that the Commission should develop a mechanism to create funds for that research to be undertaken.

4.25 Norway indicated that it recognised that the Scientific Committee had experienced difficulties, but these might relate to the way in which questions were posed by the Commission. Therefore, Norway felt it might be helpful to examine some of the facts associated with the development of the krill fishery so far. In this regard, Norway noted the trigger level limit of 620 000 tonnes and that there had not been a significant increase in recent krill catch levels. It recognised that the SSMU allocation was a complex and novel approach which may take some time to reach fruition. However, Norway was fully supportive of the process, emphasising that there was no requirement for undue haste.

4.26 China also thanked the Scientific Committee for its work. While it had only been able to participate in the SSMU allocation work to a limited extent, China recognised that there were uncertainties remaining in the Stage 1 advice on SSMU allocation (paragraphs 4.9 and 4.10) and indicated that it would endeavour to participate in WG-EMM's work in future.

4.27 The Commission agreed that all Members should contribute to scientific research and deliberations to the greatest extent possible to promote cooperation in support of CCAMLR's work. It noted that all Members should share the burden of work necessary to ensure that the best science is available to CCAMLR.

## Interactions between WG-EMM and WG-FSA

4.28 The Commission noted the terms of reference for the 2009 Workshop on Fisheries and Ecosystem Models in the Antarctic (FEMA2) (SC-CAMLR-XXVII, paragraph 3.60). It looked forward to receiving further advice from the Scientific Committee arising from this workshop.

### Harvested species

#### Krill resources

4.29 The Commission noted that eight vessels from six Member countries targeted krill in 2007/08 in accordance with conservation measures in force. A total catch of 125 063 tonnes of krill was reported to the Secretariat by the beginning of October 2008 (SC-CAMLR-XXVII, Table 1). The total catch of krill reported in 2006/07 (to the end of November) was 104 586 tonnes (SC-CAMLR-XXVII, Table 2).

4.30 The Commission noted that the total catch of krill notified for 2008/09 was 629 000 tonnes, and this was expected to be caught by 18 vessels from eight Member countries and one Acceding State (SC-CAMLR-XXVII, Table 3). This was the second year running that the notified catch was in excess of the trigger level in Area 48 (620 000 tonnes).

4.31 The Commission endorsed the Scientific Committee's advice on the krill fisheries in 2007/08 (SC-CAMLR-XXVII, paragraphs 4.25 to 4.29). The Commission agreed:

- (i) that fishing vessels should directly measure the green weight of krill caught in order to accurately determine and report the amount of krill caught;
- (ii) to revise the pro forma for notification for krill fisheries (Conservation Measure 21-03) to include specific details of gear configuration including mesh size, aperture of the net and design of marine mammal exclusion devices;
- (iii) to revise the deadline for the submission of notifications for exploratory fisheries for krill (Conservation Measure 21-03) so that these notifications may be considered at the annual meetings of WG-EMM.

4.32 The Commission noted the Scientific Committee's deliberation on the data collection plan for exploratory fisheries. This matter was discussed in paragraphs 12.25 to 12.36.

4.33 The Commission recalled that it had agreed that krill catches in Subareas 48.1, 48.2, 48.3 and 48.4 should not exceed the trigger level until a procedure for division of the overall catch limit into SSMUs had been established (CCAMLR-XIX, paragraph 10.11) (see also paragraph 4.12).

## Toothfish

4.34 The Commission noted that Members had targeted *Dissostichus eleginoides* in 2007/08 in Subareas 48.3 and 48.4 and Division 58.5.2. *Dissostichus* spp. (*D. eleginoides* and/or *D. mawsoni*) in Subareas 88.1 and 88.2 and Divisions 58.4.1, 58.4.2, 58.4.3a and 58.4.3b had also been targeted. All fisheries had been carried out in accordance with conservation measures in force. Other fisheries for *D. eleginoides* occurred in the EEZs of South Africa (Subareas 58.6 and 58.7, and outside the Convention Area in Area 51) and France (Subarea 58.6 and Division 58.5.1). A total catch of 12 573 tonnes of *Dissostichus* spp. was reported in the Convention Area in 2007/08 (to 10 October 2008), compared with 16 329 tonnes in the previous season (SC-CAMLR-XXVII, Tables 1 and 2 respectively).

4.35 Reported CDS data indicated that 10 291 tonnes of *Dissostichus* spp. were taken outside the Convention Area in 2007/08 (to October 2008) compared with 12 682 tonnes in 2006/07 (SC-CAMLR-XXVII, Annex 5, Table 4). These catches were taken mostly in Areas 41 and 87.

4.36 Estimates of catches from IUU fishing for *Dissostichus* spp. inside the Convention Area were discussed in section 10.

4.37 The Commission noted that the Scientific Committee had reviewed the requirements of exploratory fisheries for *Dissostichus* spp., and this was considered in section 12.

4.38 The Commission considered matters related to by-catch in fisheries for *Dissostichus* spp. in paragraphs 4.52 to 4.57.

4.39 Under the current arrangement for multi-year management (SC-CAMLR-XXVII, paragraph 4.49, see also CCAMLR-XXVI, paragraphs 4.56 and 4.57), the Commission noted that no new assessments were required this year for the fisheries for *D. eleginoides* in Subarea 48.3, Division 58.5.2, and for *Dissostichus* spp. in the Ross Sea (Subarea 88.1 and SSRUs 882A–B).

4.40 The Commission confirmed that the limits agreed in 2007/08 for *D. eleginoides* fisheries in Subarea 48.3 and Division 58.5.2 (CCAMLR-XXVI, paragraph 4.59; SC-CAMLR-XXVII, paragraphs 4.53, 4.54 and 4.65) would also apply in 2008/09. The Commission also endorsed the management advice for the *Dissostichus* spp. fisheries assessed by the Scientific Committee (see section 12).

4.41 The Commission noted that the introduction of biennial assessments had been extremely successful in releasing time during the intersessional period and at meetings of WG-SAM and WG-FSA (SC-CAMLR-XXVII, paragraph 16.5).

4.42 The Commission noted the Scientific Committee's advice on the fisheries for *D. eleginoides* in the French EEZs in Division 58.5.1 (Kerguelen Islands) and Subarea 58.6 (Crozet Islands). The Commission encouraged France to continue developing assessments for the stocks concerned, to continue its tagging program in these fisheries, and to avoid fishing in zones of specific high rates of by-catch (SC-CAMLR-XXVII, paragraphs 4.58 to 4.61 and 4.69 to 4.72). The Commission noted that France had made significant progress in mitigating seabird by-catch (see paragraphs 6.7 to 6.11).

4.43 The Commission noted that the Scientific Committee was unable to provide management advice for the fishery for *D. eleginoides* in the South African EEZ in Subareas 58.6 and 58.7 (Prince Edward Islands). The Commission urged South Africa to adopt the CCAMLR decision rules for estimating yields for this fishery (SC-CAMLR-XXVII, paragraph 4.76).

4.44 The Commission agreed that prohibition of directed fishing should remain in force for *D. eleginoides* in Subareas 58.6 and 58.7, and Divisions 58.4.4 and 58.5.1 in areas outside national jurisdiction (SC-CAMLR-XXVII, paragraphs 4.60 and 4.71).

#### Icefish

4.45 The Commission noted that Members had targeted *Champsocephalus gunnari* in Subarea 48.3 and Division 58.5.2 in 2007/08 in accordance with conservation measures in force. A total of 2 565 tonnes of *C. gunnari* was taken in the Convention Area (to 23 October 2008), compared with 4 347 tonnes in 2006/07 (SC-CAMLR-XXVII, Tables 1 and 2 respectively).

4.46 The Commission endorsed the management advice for the two fisheries for *C. gunnari* which had been assessed by the Scientific Committee and agreed that:

- (i) the catch limit for *C. gunnari* in Subarea 48.3 should be revised to 3 834 tonnes in 2008/09 (SC-CAMLR-XXVII, paragraph 4.82);
- (ii) the catch limit for *C. gunnari* in Division 58.5.2 should be set at 102 tonnes in 2008/09, and the remaining provisions of Conservation Measure 42-02 should be carried forward (SC-CAMLR-XXVII, paragraphs 4.87 and 4.88).

#### Other finfish species

4.47 The Commission noted the results of the three-year mark-recapture experiment conducted in the Northern Area of Subarea 48.4 (Conservation Measure 41-03). It also noted the Scientific Committee's consideration of a proposal to continue the mark-recapture experiment in 2008/09 so as to allow for a full assessment of *D. eleginoides* in that area in 2009. In addition, the Scientific Committee had considered a new mark-recapture experiment in the Southern Area of Subarea 48.4 to assess the population structure, size, movement and growth of both *D. eleginoides* and *D. mawsoni* in that area (SC-CAMLR-XXVII, paragraphs 4.93 to 4.96).

4.48 The Commission endorsed the Scientific Committee's advice for extending the *D. eleginoides* fishery in the Northern Area of Subarea 48.4, and the implementation of a fishery for *D. eleginoides* and *D. mawsoni* in the Southern Area, as follows (SC-CAMLR-XXVII, paragraphs 4.97 and 4.98):

#### Northern Area –

- (i) a catch limit of 75 tonnes for *D. eleginoides*;



- (ii) the continued prohibition of the taking of *D. mawsoni* other than for scientific research purposes;
- (iii) the introduction of catch limits for by-catch species, with a limit for *Macrourus* spp. of 12 tonnes (16% of the catch limit for *D. eleginoides*) and a limit for rajids of 4 tonnes (5% of the catch limit for *D. eleginoides*).

Southern Area –

- (i) a catch limit of 75 tonnes for *Dissostichus* spp. (*D. eleginoides* and *D. mawsoni* combined) in the Southern Area;
- (ii) the introduction of a move-on rule for by-catch species, with a *Macrourus* spp. trigger set at 16% of the catch of *Dissostichus* spp., and a trigger for rajids set at 5% of the catch of *Dissostichus* spp.

Crab resources

4.49 The Commission noted that there had been no fishery for crab in Subarea 48.3 in 2007/08, and that one Member had notified its intention to harvest crab in 2008/09. The Commission endorsed the Scientific Committee's management advice that the existing elements of Conservation Measures 52-01 and 52-02 on crabs be carried forward (SC-CAMLR-XXVII, paragraph 4.194). The Commission agreed to combine Conservation Measures 52-01 and 52-02 into a single measure (paragraph 13.60).

4.50 The Commission also considered two new fisheries for crab in Subareas 48.2 and 48.4. These new fisheries were considered in section 12.

Squid resources

4.51 The Commission noted that there had been no fishery for *Martialia hyadesi* in Subarea 48.3 in 2007/08 and that no notification to harvest this species had been received for 2008/09. The Commission endorsed the Scientific Committee's management advice that the existing elements of Conservation Measure 61-01 should be carried forward (SC-CAMLR-XXVII, paragraph 4.196).

By-catch species

4.52 The Commission noted that none of the limits on by-catch set in the conservation measures applying to the statistical areas managed by CCAMLR were exceeded during the 2007/08 season.

*Macrourus* move-on rules and by-catch limits  
in new and exploratory fisheries

4.53 The Commission noted that the Scientific Committee had reviewed the performance of the modified by catch move-on rule for *Macrourus* spp. in new and exploratory fisheries (Conservation Measure 33-03). As *Macrourus* spp. by-catch had not increased in 2007/08, the Scientific Committee recommended that the modified move-on rule be retained (SC-CAMLR-XXVII, paragraph 4.198). The Commission endorsed this advice.

4.54 The Commission endorsed the Scientific Committee's revision of the precautionary by-catch limits for *Macrourus* spp. in the Ross Sea, as a result of a trawl survey conducted by New Zealand as part of its IPY activities (SC-CAMLR-XXVII, paragraphs 4.199 and 4.200).

Year-of-the-Skate

4.55 The Commission endorsed the Scientific Committee's recommendations for the Year-of-the-Skate in 2008/09 (SC-CAMLR-XXVII, paragraphs 4.201 to 4.205). The Commission noted that these recommendations focused on exploratory fisheries. However, it encouraged Members engaged in all fisheries for toothfish to participate in the Year-of-the-Skate. The Commission agreed that during the Year-of-the-Skate:

- (i) all skates should be brought on board or alongside the hauler to be correctly identified, scanned for tags and for their condition to be assessed;
- (ii) all skates that are likely to survive if released (condition 3 or 4) should be released by cutting the snood as close to the hook as possible or cutting the snood and removing the hook from the skate, providing this does not further injure the skate;
- (iii) all skates which are dead or with life-threatening injuries (condition 1 or 2 in the logbook) should be retained by the vessels;
- (iv) skates released alive should be doubled-tagged (i.e. two tags per skate) at a rate of one skate in every five skates caught in exploratory fisheries, up to a maximum of 500 skates per vessel;
- (v) tagged skates should be identified to species, measured before they are released and that, where possible, tagging experiments be undertaken to compare different tag types and estimate tag-shedding rates;
- (vi) the tagging program will be coordinated by the Secretariat, which will be the repository for skate tagging kits;
- (vii) when skates are caught on a line, they should be randomly sampled by observers at a rate of three skates per thousand hooks for the purpose of collecting biological measurements;

- (viii) skates should not be sacrificed for biological sampling, and female maturity stage should only be recorded if the skate is dead or has sustained life-threatening injuries (conditions 1 and 2);
- (ix) all live skates which are part of the biological sampling, which have not sustained life-threatening injuries, should be handled with care and released after biological information has been recorded, if they are still suitable for release (i.e. still in condition 3 or 4).

#### Benthic invertebrate identification guides

4.56 The Commission welcomed the production of new tools for identifying benthic invertebrate by-catch, including a field guide for the invertebrates in Division 58.5.2 developed by Australia and an identification poster for benthic taxa in the Ross Sea developed by New Zealand. The Commission noted that these tools could be used to improve data collection on potential VME encounters.

4.57 The Commission considered matters related to bottom fishing activities and VMEs in section 5.

#### By-catch of larval and juvenile fish

4.58 The Commission noted that there was still uncertainty over the level of by-catch of juvenile and larval fish in the krill catch for all seasons and areas in which the krill fishery was operating as well as for different fishing gear.

4.59 The Commission noted that a guide to larval and juvenile fish published in Russian had been submitted to CCAMLR. This guide will be translated so that it can be used by scientific observers (SC-CAMLR-XXVII, paragraph 11.4(iv)).

4.60 The Commission agreed that collection of information on fish by-catch should remain a priority task for scientific observers on krill vessels.

#### Climate change

4.61 The Commission endorsed the three key areas of work proposed by the Scientific Committee (SC-CAMLR-XXVII, paragraphs 7.10 to 7.16) in relation to management responses arising from climate change. Taking account of the issues outlined in SC-CAMLR-XXVII, paragraph 7.13, the Commission agreed that examining the following would contribute to meeting the objectives of the Convention:

- (i) the robustness of the Scientific Committee's advice provided and the stock assessments prepared by its working groups in the face of increasing uncertainty accompanying climate change, particularly in relation to predictions of future population responses and recruitment levels;

- (ii) the need for, and implement as appropriate, improvements to current monitoring programs of harvested species and dependent and related species so as to provide robust and timely indicators of climate change impacts;
- (iii) whether CCAMLR's management objectives and performance indicators require modification to remain appropriate in the face of climate change uncertainty.

4.62 The Commission agreed that climate change is a very important issue and that it looked forward to continuing to receive reports from the Scientific Committee and its working groups in terms of accessing further information on progress and on the presentation of relevant advice.

4.63 Australia referred the Commission to SC-CAMLR-XXVII, paragraph 7.16, and encouraged CCAMLR Members to facilitate the attendance of scientists at a workshop to be held in Hobart, Australia (20 to 24 April 2009 at CCAMLR Headquarters), which will address important issues associated with measuring, assessing and providing early-warning detection of climate change impacts on Southern Ocean ecosystems and biodiversity ([www.aad.gov.au/default.asp?casid=35088](http://www.aad.gov.au/default.asp?casid=35088)).

#### Scientific research exemption

4.64 New Zealand proposed to conduct a winter research survey in Subarea 88.1 to investigate the early life history and reproduction of *D. mawsoni* in the Ross Sea (SC-CAMLR-XXVII, Annex 5, paragraphs 5.108 to 5.110; see also CCAMLR-XXVII/BG/15). New Zealand indicated that after consultations with another Member it had deferred its research proposal until the next Commission meeting.

4.65 Japan proposed to conduct a research survey in Divisions 58.4.4a and 58.4.4b to collect data to assess the stock in these closed divisions. The Commission endorsed the Scientific Committee recommendation that the following actions should be taken before additional research is conducted in Divisions 58.4.4a and 58.4.4b, arising from the Japanese proposal to continue research on the distribution and population structure of toothfish (started in 2007/08) (SC-CAMLR-XXVII, Annex 5, paragraphs 5.116 and 5.117; see also CCAMLR-XXVII/BG/15) that:

- (i) the results of the recent longline survey be reported to WG-FSA at its next meeting;
- (ii) the design of a future survey be discussed and agreed at WG-SAM;
- (iii) in the next year, comparable fishing trials should be carried out in areas other than Division 58.4.4, to attempt the calibration of the trotline gear with the other longline gear.

## CCAMLR-sponsored research

4.66 The Commission endorsed the general principles, requirements and planning process to be met for CCAMLR-sponsored research (SC-CAMLR-XXVII, paragraphs 8.9 and 8.10). It noted that the following Members would be conducting scientific research surveys in 2009 in accordance with Conservation Measure 24-01:

- Australia: demersal fish survey in Division 58.5.2 in May–June 2009
- UK: demersal fish survey in Subarea 48.3 in January–February 2009
- USA: demersal fish survey in Subarea 48.2.

## Secretariat supported activities

4.67 The Commission noted the Secretariat's activities outlined in SC-CAMLR-XXVII (paragraphs 13.1 to 13.11) and endorsed the Secretariat approach to CCAMLR metadata as part of the Global Change Master Directory (GCMD) (paragraph 14.5).

4.68 The Commission noted the various documents that had been published in 2008 in support of its and the Scientific Committee's work (SC-CAMLR-XXVII, paragraph 13.12).

4.69 The Commission endorsed the various Scientific Committee decisions in relation to *CCAMLR Science* (SC-CAMLR-XXVII, paragraphs 13.18 to 13.23).

4.70 The Commission noted the Scientific Committee's continued consideration concerning the status of Members' Activities Reports (SC-CAMLR-XXVII, paragraph 16.11), and that in 2005 the Committee had advised that such reports were no longer required for its work or that of its working groups (SC-CAMLR-XXIV, paragraphs 15.1 to 15.5). It also noted that SCIC had been requested to recommend to the Commission that Members' Activities Reports are no longer required in that Committee's work (Annex 5, paragraph 9.1). The Commission therefore agreed that Members' Activities Reports will no longer need to be submitted.

## Scientific Committee activities

4.71 The Commission noted that the Chair of the Scientific Committee had been tasked with developing a process to consider prioritisation of future Scientific Committee work and that of its working groups (SC-CAMLR-XXVI, paragraph 14.1).

4.72 It endorsed the Scientific Committee's grateful acceptance of the Norwegian invitation to host the 2009 meetings of WG-EMM, ad hoc Technical Group for At-Sea Operations (TASO), WG-SAM, and the FEMA2 Workshop in Bergen, Norway, in July 2009.

4.73 The Commission accepted the work plans for the Scientific Committee and its subsidiary working bodies in 2009 (SC-CAMLR-XXVI, paragraphs 14.3 and 14.4). This work included:

- Joint SC-CAMLR–CEP Workshop, Baltimore, USA, 3 and 4 April 2009;
- SG-ASAM in Ancona, Italy, 25 to 29 May 2009 (Co-conveners Drs J. Watkins (UK) and R. O'Driscoll (New Zealand));

- WG-SAM in Bergen, Norway, 29 June to 3 July 2009 (Convener Dr A. Constable (Australia));
- ad hoc TASO, Bergen, Norway, 4 and 5 July 2009 (Co-conveners Dr D. Welsford (Australia) and Mr C. Heinecken (South Africa));
- WG-EMM, Bergen, Norway, 6 to 17 July 2009 (Convener Dr G. Watters (USA)). The FEMA2 Workshop will be held as a Focus Topic during the first week of WG-EMM and will be co-convened by the Conveners of WG-EMM and WG-FSA;
- Workshop on VMEs, Washington DC, USA (Co-conveners Drs K. Martin-Smith (Australia) and C. Jones (USA), venue and timing of meeting to be announced by December 2008);
- WG-FSA at CCAMLR Headquarters, Hobart, Australia, 12 to 23 October 2009 (Convener Dr Jones);
- WG-IMAF at CCAMLR Headquarters, Hobart, Australia, 12 to 16 October 2009 (Co-conveners Ms K. Rivera (USA) and Mr N. Walker (New Zealand)).

4.74 The Commission noted the Scientific Committee's decision that all observers invited to SC-CAMLR-XXVII would be invited to participate in SC-CAMLR-XXVIII (SC-CAMLR-XXVII, paragraph 14.8).

4.75 The Commission noted that the Scientific Committee had unanimously elected Prof. C. Moreno (Chile) and Dr V. Bizikov (Russia) to the positions of Chair and Vice-Chair of the Scientific Committee respectively, both for a term of two regular meetings (2009 and 2010) (SC-CAMLR-XXVII, paragraphs 15.1 to 15.3). A very warm welcome was extended to both Prof. Moreno and Dr Bizikov.

4.76 The Commission note the Scientific Committee's concern that its workload and that of its working groups, has increased in recent years, while the number of participants and Members represented had decreased over the same period (SC-CAMLR-XXVII, paragraphs 16.5 to 16.8).

4.77 The Commission agreed that such a situation may delay timely advice on matters of importance to the Commission, particularly advice needed for achieving the objectives in Article II. It urged Members to consider ways of capacity building, including augmenting participation in the work the Scientific Committee and its working groups.