

SCIENTIFIC COMMITTEE

4.1 The Chair of the Scientific Committee, Dr E. Fanta (Brazil) presented the report of the Scientific Committee (SC-CAMLR-XXVI). The Commission thanked Dr Fanta for her comprehensive report (CCAMLR-XXVI/BG/50).

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 other parts of the former'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 2007 (SC-CAMLR-XXVI, paragraphs 1.9 and 1.14). The Commission joined the Scientific Committee in thanking the conveners of the working groups, subgroups and workshops for their contributions to the work of CCAMLR.

4.4 The Commission joined the Scientific Committee in encouraging all Members to participate fully in the future work of the Scientific Committee, and to send experts to the meetings of all working groups (SC-CAMLR-XXVI, paragraphs 1.8 and 14.10).

4.5 The Commission recognised that the work of the Scientific Committee and its working groups was expanding, and the methodologies used were becoming increasingly complex. Some Members identified difficulties in engaging scientists in the work of the working groups because of the high degree of CCAMLR-specific methodologies and terminology used by working groups, and the frenetic pace of the work during meetings.

4.6 The Commission encouraged the Scientific Committee and its working groups to consider the issues raised by some Members, and develop approaches which facilitated greater participation by CCAMLR's scientific community.

CCAMLR Scheme of International Scientific Observation

4.7 CCAMLR-designated scientific observers were deployed on all vessels fishing for finfish in the Convention Area in 2006/07. In addition, scientific observers were deployed on krill fishing vessels under the scheme. The Scientific Committee's advice on scientific observation is considered in section 11.

Advances in statistics, assessments, modelling

4.8 The Commission noted the progress made by the Scientific Committee and the Working Group on Statistics, Assessments and Modelling (WG-SAM) in developing methodologies in two broad technical areas in 2007 (SC-CAMLR-XXVI, paragraphs 2.2 to 2.17 and Annex 7):

- (i) fish stock assessment methods, including:
 - (a) evaluation of a proposed depletion method for assessing toothfish in Division 58.4.3b;
 - (b) advancements with respect to new methods for assessing by-catch species;
 - (c) review of the preliminary work towards the Working Group on Fish Stock Assessment's (WG-FSA) toothfish assessment in Subarea 48.3, Division 58.5.2 and the Ross Sea (Subarea 88.1 and SSRUs 882A–B) using CASAL;
 - (d) further developments toward evaluation of management strategies;
 - (e) examination of the consequences of conducting assessments of toothfish stocks at multi-year intervals (see also paragraphs 4.57 and 4.58);
- (ii) krill and predator–prey modelling, including:
 - (a) development of a staged approach towards subdividing the krill catch among SSMUs which, at each stage, would involve:
 - evaluation of the risks to krill, predators and the fisheries of the different options for subdividing the catch given the uncertainties in model structures, our understanding of the dynamics of the krill-based ecosystem and the future interactions of the fishery with the system;
 - formulation of advice on the strategy for subdividing catch along with the attendant risks at different aggregate catches;
 - (b) identification of data types needed for the development of an integrated assessment of krill.

4.9 The Commission endorsed the advice of the Scientific Committee and related future work on fish stock assessment methods, including:

- (i) improvements in data collection for by-catch species for assessment purposes, with a focus on rajids (skates) in 2008/09 (Year of the Skate, see SC-CAMLR-XXVI, paragraph 4.181), and macrourids (rattails) in the future;
- (ii) identification of factors responsible for the high variability of the data quality arising from different vessels in Subareas 88.1 and 88.2, to ensure consistent high-quality data for assessments in multi-vessel, multi-nation fisheries.

4.10 The Commission noted the need for a more descriptive analysis of the tag–release and recapture data, further research into the spatial pattern of tag recaptures and methods to describe movement (SC-CAMLR-XXVI, paragraph 2.3).

4.11 The Commission welcomed the Scientific Committee’s progress in developing a staged approach to subdivide the precautionary catch limit for krill in Area 48 among SSMUs. The advice from the Scientific Committee on this matter was considered in paragraphs 4.18 to 4.25.

4.12 The Commission also noted that the Scientific Committee had endorsed the role and terms of reference of WG-SAM, and the relationship between WG-SAM and the other working groups (SC-CAMLR-XXVI, paragraph 2.16).

Advances in acoustic survey and analysis methods

4.13 The Commission noted the progress made by the Scientific Committee and the Subgroup on Acoustic Survey and Analysis Methods (SG-ASAM) in developing methodologies in acoustic analysis and survey design (SC-CAMLR-XXVI, paragraphs 2.18 to 2.22; SC-CAMLR-XXVI/BG/2).

4.14 The Commission noted that SG-ASAM’s recommendations on krill and icefish were considered by WG-EMM and WG-FSA in 2007. The Commission also noted the prevalence and ecological importance of myctophids in Antarctic waters and encouraged further work on these species (SC-CAMLR-XXVI, paragraphs 2.19 and 2.20).

4.15 The Commission endorsed the Scientific Committee’s proposal to hold a fourth meeting of SG-ASAM in conjunction with the ICES WG-FAST meeting in 2009 to consider acoustic results from IPY surveys, developments in TS modelling and other new observations (SC-CAMLR-XXVI, paragraphs 2.21 and 2.22).

Ecosystem monitoring and management

4.16 The Commission noted the progress made by the Scientific Committee and WG-EMM in 2007 (SC-CAMLR-XXVI, paragraphs 3.1 to 3.100 and Annex 4). This work included:

- (i) further development of management procedures to evaluate options for subdividing the krill catch limit among small-scale management units (SSMUs) and consideration of the advice from WG-SAM;
- (ii) a workshop to review estimates of B_0 and precautionary catch limits for krill;
- (iii) development of requirements for scientific observation and other data from krill fisheries;
- (iv) review of management plans for CEMP sites and the Antarctic Treaty Consultative Meeting’s (ATCM) proposed Antarctic Specially Managed Area (ASMA);
- (v) Workshop on Bioregionalisation of the Southern Ocean.

4.17 The Commission considered the Scientific Committee's advice on management plans and bioregionalisation in section 7.

4.18 The Commission endorsed the Scientific Committee's advice on a staged approach to subdivide the precautionary catch limit for krill in Area 48 among SSMUs (SC-CAMLR-XXVI, paragraph 2.14). In particular, the Commission agreed that the initial subdivision (Stage I) of the catch limit for krill should be based primarily on one of Options 2 (based on the spatial distribution of predator demand), 3 (based on the spatial distribution of krill biomass) and 4 (based on the spatial distribution of krill biomass minus predator demand).

4.19 The Commission endorsed the Scientific Committee's work plan aimed at providing advice on Stage I in 2008, including the further development of performance measures and risk assessments. The Commission agreed that consideration of Options 5 (based on spatially explicit indices of krill availability that may be monitored or estimated on a regular basis) and 6 (pulse-fishing strategies in which catches are rotated within and between SSMUs) should be accorded a high priority starting in 2009 (SC-CAMLR-XXVI, paragraphs 3.36 to 3.38). The Commission also agreed that 'structured fishing' is a useful elaboration of the meaning of Option 6.

4.20 The Commission noted the progress on the development of krill and predator-prey modelling and that the FOOSA model (previously known as KPFM2) is well advanced for this task.

4.21 The Commission noted the outcomes of the Workshop to Review Estimates of B_0 and Precautionary Catch Limits for Krill, and endorsed the Scientific Committee's advice on this matter (SC-CAMLR-XXVI, paragraphs 3.18, 3.19 and 3.21; see also paragraph 4.11), including:

- (i) the most appropriate method for estimating B_0 from survey data was still the Jolly and Hampton (1990) method as has been used for all CCAMLR B_0 surveys to date;
- (ii) current CCAMLR protocols for the acoustic estimation of krill biomass and its variance should follow those of the CCAMLR-2000 Survey, except with regard to target strength and species identification; for these procedures, the recommendations of SG-ASAM should be followed (SC-CAMLR-XXIV, Annex 6; SC-CAMLR-XXVI, paragraph 3.19);
- (iii) any future surveys intended to produce estimates of B_0 should follow the agreed protocols and be first presented to WG-EMM for its consideration and approval;
- (iv) implementation uncertainty caused by IUU fishing for krill or spatial/temporal misreporting is not currently incorporated in the assessment and decision rules, and may be either minimised by implementing appropriate control measures or explicitly represented in models (SC-CAMLR-XXVI, paragraph 3.31).

4.22 The Commission endorsed the Scientific Committee's advice that the B_0 estimate of 37.29 million tonnes (CV 21.20%) represents the best advice on the biomass estimate for krill in Area 48 during the CCAMLR-2000 Survey and that, using these values and the updated γ

arising from the use of the GYM (0.093), compared to the KYM (0.091), the precautionary catch limit for Area 48 should be updated to 3.47 million tonnes (SC-CAMLR-XXVI, paragraph 3.21).

4.23 The Commission endorsed the Scientific Committee's advice on the new estimate of B_0 for Division 58.4.2 of 28.75 million tonnes (CV 16.18%), produced using the new simplified stochastic distorted-wave Born approximation (SDWBA) model for target strength and species identification (SC-CAMLR-XXVI, paragraph 3.22). This biomass was divided into a western subdivision between 30° and 55°E (16.17 million tonnes, CV 18.36%) and an eastern subdivision between 55° and 80°E (11.61 million tonnes, CV 29.82%), with γ values being calculated using the GYM. The resulting precautionary catch limits for krill were 1.448 million tonnes and 1.080 million tonnes in the western and eastern subdivisions respectively.

4.24 The Commission noted the deliberations of the Scientific Committee and WG-EMM on the wider Antarctic ecosystem. In particular, the Commission noted the importance of the long time series of krill density and recruitment indices collected as part of the BAS, US AMLR and LTER national programs contributing to CCAMLR work, and the continuing need to collect and submit such data to the working groups into the future (SC-CAMLR-XXVI, paragraphs 3.32 and 3.33).

4.25 The Commission urged Members to develop and maintain long-term scientific monitoring programs studying the krill-based ecosystem as these will provide data that will allow the Scientific Committee to investigate the effects of climate change as well as the effects of the fishery. The Commission noted that this work may be facilitated by coordination of future long-term research to develop the best sites and data.

4.26 The Commission endorsed the Scientific Committee's priorities for the 2008 meeting of WG-EMM (SC-CAMLR-XXVI, paragraph 3.40).

4.27 The Commission noted progress by the Scientific Committee and WG-EMM on the estimation of land-based marine predator abundance in the southwest Atlantic. WG-EMM will hold a Predator Survey Workshop in Hobart in June 2008, and has identified a considerable program of work beyond 2008 (SC-CAMLR-XXVI, paragraphs 6.4 to 6.6).

4.28 The Commission also noted that the Scientific Committee has endorsed the invitation and participation of appropriate SCAR experts at the abovementioned workshop, and the participation of one invited expert who should be experienced in the statistical estimation of land-based predator populations. The results of the workshop would be reported to the 2008 meetings of WG-SAM and WG-EMM (SC-CAMLR-XXVI, paragraphs 6.7 to 6.9).

Interactions between WG-EMM and WG-FSA

4.29 The Commission noted the Scientific Committee's progress in developing interactions between WG-EMM and WG-FSA, including the results of a one-day joint WG-EMM and WG-FSA workshop to begin developing ecosystem models that examine the effects of fisheries in fish-based ecosystems (SC-CAMLR-XXVI, paragraphs 3.93 to 3.100 and SC-CAMLR-XXVI/BG/6).

4.30 The focus of the workshop was to identify the potential risks from some CCAMLR fisheries and to review progress on work being undertaken that might contribute to assessing those risks. Presentations were made on approaches to developing ecosystem models for CCAMLR fisheries:

- *Euphausia superba* in the south Atlantic
- *Chamsocephalus gunnari* at South Georgia
- *C. gunnari* and *Dissostichus eleginoides* at Heard Island
- *D. mawsoni* in the Ross Sea.

4.31 The Commission endorsed the Scientific Committee's advice on future work, including the development of ecosystem models which could take into account the complex interactions between predators, target species, prey and other fisheries as outlined in SC-CAMLR-XXVI, paragraph 3.99.

Harvested species

Krill resources

4.32 The Commission noted that six vessels from four Member countries targeted krill in 2006/07. A total catch of 104 364 tonnes of krill was reported to the Secretariat by the beginning of October 2007. The total catch of krill reported in 2005/06 (to the end of November) was 106 591 tonnes (SC-CAMLR-XXVI, Tables 1 and 3).

4.33 The Commission noted that some catch and effort data submitted by Poland in previous seasons may not be reported on a haul-by-haul basis. Poland agreed to address this issue in consultation with the Secretariat.

4.34 The Commission noted that the total catch of krill initially notified for the 2007/08 season was 764 000 tonnes, and was expected to be caught by 25 vessels from seven Member countries and two Acceding States (Table 2). However, during the meeting of the Scientific Committee, the Secretariat had been advised that Vanuatu had withdrawn its notification to participate in the krill fishery. This brought the total notified catch of krill for 2007/08 to 684 000 tonnes. The notified catch was in excess of the trigger level in Area 48 (620 000 tonnes).

4.35 The Commission endorsed the Scientific Committee's advice on notifications for krill fisheries in 2007/08 (SC-CAMLR-XXVI, paragraphs 4.2 to 4.24), and noted:

- (i) the significant increase in the number and scale of notifications, which reflects a genuine increase in interest in krill products and was likely to result in a significant increase in krill catches over the next year;
- (ii) a need for the orderly development of the krill fishery (see SC-CAMLR-XXVI, Annex 4, paragraphs 4.73 to 4.76) in order to ensure that the CCAMLR objectives are met;
- (iii) a scientific need for systematic observer coverage in the krill fishery;

- (iv) a need for additional information on a number of operational aspects of the krill fishery.

4.36 The Commission also noted that three fishing methods had been notified for 2007/08:

- (i) conventional trawling, with catches brought alongside the vessel and then either lifted or pumped on board;
- (ii) continuous fishing system using a single trawl, with catches continuously pumped on board whilst the vessel was fishing;
- (iii) pair trawling using a single trawl towed between two vessels.

4.37 The Commission noted Members' concerns about the notifications, including:

- (i) pair trawling was a new method for catching krill and has not been used in the Convention Area;
- (ii) based on experience in other pair-trawl fisheries, pair trawling may result in high levels of incidental mortality of marine mammals, sharks and penguins;
- (iii) there was a large number of vessels notified for some areas;
- (iv) uncertainty over the beneficial ownership and flag of some notified vessels;
- (v) difficulties in recording accurate catch-per-unit-effort taken by the continuous fishing system;
- (vi) observed instance where seals are attracted to the continuous fishing system;
- (vii) the need to develop the method for recording catch and effort from pair trawling;
- (viii) variable levels of coverage by scientific observers proposed in the notifications.

4.38 In response to some of these concerns, the Cook Islands advised that:

- (i) all vessels notified by the Cook Islands would be flagged to the Cook Islands prior to licences being issued for krill fishing in the Convention Area;
- (ii) government officials have verified beneficial ownership of notified vessels and are satisfied that a genuine link exists to the Cook Islands, and the notification reflects in-depth arrangements with long-term benefit to the Cook Islands;
- (iii) mitigation measures (grid method) will be implemented on the pair trawlers, and scientific observer coverage will be increased to address concerns expressed by the Commission;
- (iv) it will comply with all relevant conservation measures and was prepared to work closely with the Commission to address any concerns raised by Members and the Scientific Committee.

4.39 Norway advised that it is developing a system which allowed vessels using the continuous fishing system to measure catch in real-time, and to accurately report catches at two-hour intervals. It also advised that its vessel was employing efficient mitigation measures and had not observed any incidental mortality of marine mammals or seabirds. In addition, the by-catch rates of larval fish caught in the continuous fishing system were comparable to those observed in conventional trawls (WG-EMM-07/16 synopsis in SC-CAMLR-XXVI/BG/14).

4.40 New Zealand expressed concern regarding the use of pair trawling in the Convention Area. This was a new fishing method which was untested in the Convention Area. New Zealand urged the Commission to maintain its precautionary approach, and refer the matter to ad hoc WG-IMAF for detailed evaluation prior to the method being introduced in the krill fishery.

4.41 ASOC urged the Commission to develop a strategic plan for krill fisheries as the most effective way to address scientific, policy and regulatory elements relevant to krill fisheries management (CCAMLR-XXVI/BG/25). Such a plan would provide structure to a diverse range of activities that are currently being conducted by the Commission in support of its conservation objectives. It would also allow the Commission to prioritise critical and urgent issues, while keeping its long-term vision focused on the vital role of krill in the Antarctic marine ecosystem. The development of such a strategic plan should be a high priority for the Commission and the Scientific Committee.

4.42 ASOC also urged the Commission to ensure the orderly development of the krill fishery, including:

- (i) identifying the local impacts on vulnerable land-breeding predator colonies, taking into account the spatial overlap between the krill fishery and the foraging ranges of these predators;
- (ii) implementing an incremental management regime at the SSMU level in Area 48;
- (iii) establishing systematic scientific observer coverage on board vessels in the krill fishery;
- (iv) introducing VMS on krill fishing vessels as a basic measure to adequately monitor krill fishing operations;
- (v) applying Port State controls to krill fishing vessels.

4.43 ASOC indicated that it believed that the Commission has a unique window of opportunity to develop a strategic long-term plan for krill management in order to effectively implement the ecosystem approach. Recognising that the Commission had taken the initial first steps at this meeting, ASOC encouraged Members to keep making progress and to establish a management plan to provide for the orderly development of the krill fishery.

4.44 The Commission endorsed the Scientific Committee's advice to further develop details required in the krill fishery notification procedure (Conservation Measure 21-03, Annex A). In addition, the Commission noted the continuing large discrepancy between notifications for krill fishing and actual fishing effort. Extensive consideration of notifications which were not subsequently implemented reduced the time available to the Commission and the Scientific

Committee to consider other matters. The Commission agreed to investigate ways to reduce the number of notifications which are not followed by fishing (SC-CAMLR-XXVI, paragraphs 3.45 and 3.46).

4.45 The Commission noted the Scientific Committee's advice that under current reporting requirements the Secretariat would need to forecast krill catches 120 days in advance to effect a closure of a krill fishery. The Commission agreed that a shorter catch reporting period would be required as the fishery approached the trigger level, and agreed to implement the 10-day catch and effort reporting system (Conservation Measure 23-02) as soon as 80% of the trigger level in any krill fishery had been reached (SC-CAMLR-XXVI, paragraph 3.48).

4.46 The Commission also noted that the Data Reporting System for Krill Fisheries (Conservation Measure 23-06) does not specify the requirement for the collection of biological information. The Commission endorsed the Scientific Committee's recommendation for reporting of biological data from krill fisheries, and noted that WG-EMM had been asked to consider the biological data reporting requirements and advise the Scientific Committee in 2008, with the aim of adding biological data reporting requirements to Conservation Measure 23-06 (SC-CAMLR-XXVI, paragraphs 3.50 and 3.51).

4.47 The Commission recalled that it had agreed that krill catches in Area 48 should not exceed a trigger level until a procedure for division of the overall catch limit into SSMUs had been established (CCAMLR-XIX, paragraph 10.11). It further noted that the current version of Conservation Measure 51-01 would not allow the Secretariat to implement the trigger level as intended (SC-CAMLR-XXVI, paragraph 3.42). Consequently, the Commission agreed to revise this measure to clarify the intention of the trigger level (see paragraph 4.48).

4.48 The Commission endorsed the Scientific Committee's advice to revise the precautionary catch limit for krill in Area 48 to 3.47 million tonnes (see paragraph 4.22). The Commission noted that catch limits in Subareas 48.1, 48.2, 48.3 and 48.4 (each currently in excess of the trigger limit) were not necessary, given the decision to apply catch limits to SSMUs once the trigger level is reached. The Commission agreed to revise Conservation Measure 51-01 (paragraph 4.47).

4.49 The Commission endorsed the Scientific Committee's revision of the precautionary catch limit for krill in Division 58.4.2 to 2.645 million tonnes, with a further subdivision along the 55°E meridian. The Commission also agreed to introduce trigger levels to manage the orderly development of the fishery, and agreed that such trigger levels be calculated in a manner consistent with the proportion of B_0 used in Area 48. It further agreed to deploy scientific observers in accordance with the Scheme of International Scientific Observation to collect data on fishing operations, by-catch and krill demographics (SC-CAMLR-XXVI, paragraphs 3.54 to 3.57).

4.50 The Commission endorsed the Scientific Committee's advice that krill fisheries in areas without precautionary catch limits (e.g. Area 88 and Subarea 48.6) should be considered as exploratory fisheries and that the conditions applied to other exploratory fisheries (Conservation Measure 21-02) should apply (SC-CAMLR-XXVI, paragraphs 3.52 and 3.53).

Toothfish

4.51 The Commission noted that Members had targeted *D. eleginoides* in 2006/07 in Subareas 48.3 and 48.4 and Division 58.5.2, and *Dissostichus* spp. in Subareas 48.6, 88.1, 88.2 and Divisions 58.4.1, 58.4.2, 58.4.3a and 58.4.3b. 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 14 023 tonnes of *Dissostichus* spp. was reported in the Convention Area in the 2006/07 season (to October 2007), compared with 16 843 tonnes in the previous season (SC-CAMLR-XXVI, Tables 1 and 3).

4.52 Data reported in the CDS indicated that 9 084 tonnes of *Dissostichus* spp. were taken outside the Convention Area in 2006/07 (to October 2007) compared with 9 790 tonnes in 2005/06 (SC-CAMLR-XXVI, Annex 5, Table 4). The catch of *Dissostichus* spp. reported through the CDS in Areas 41 and 87 was 3 798 tonnes and 4 631 tonnes respectively in 2006/07, compared with 5 165 and 3 985 tonnes respectively in 2005/06.

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

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

4.55 The Commission considered matters related to by-catch in fisheries for *Dissostichus* spp. in paragraph 4.75.

4.56 The Commission noted the Scientific Committee's deliberations with respect to biennial assessments, and endorsed the management advice that assessments of long-term precautionary yield for *Dissostichus* spp. in the Ross Sea (Subarea 88.1 and SSRUs 882A–B), Subarea 48.3 and Division 58.5.2 had been moderately stable in the last few years, and stocks were at, or above, target levels (SC-CAMLR-XXVI, paragraph 14.6).

4.57 The Commission agreed that the Scientific Committee and WG-FSA may now conduct assessments for fisheries for *Dissostichus* spp. in the Ross Sea, Subarea 48.3 and Division 58.5.2 at two-year (biennial) intervals, unless any of the following factors occurred during the interval period:

- (i) new or refined methods of assessment become available and recommended by WG-SAM for use in the assessment;
- (ii) parameters used in the assessment are revised significantly; or
- (iii) a large IUU catch (unless this was anticipated in the assessment).

4.58 The Commission recalled that the introduction of multi-year assessments would allow the Scientific Committee additional time to advance other high-priority issues such as Management Strategy Evaluations to evaluate the efficacy of methods to achieve management objectives (CCAMLR-XXV, paragraph 4.53) and to progress assessments of exploratory fisheries.

4.59 The Commission endorsed the management advice for the *Dissostichus* spp. fisheries which had been assessed by the Scientific Committee (see also section 12). The Commission agreed to the following limits for the 2007/08 fishing season:

- (i) the catch limit for *D. eleginoides* in Subarea 48.3 (SGSR stock) should be 3 920 tonnes, the catch limits for management areas A, B and C should be adjusted in a pro-rata manner to 0 (excepting 10 tonnes for research fishing), 1 176 and 2 744 tonnes respectively, and the by-catch limits for rajids¹ and macrourids should remain at the level of 5%, that is 196 and 196 tonnes respectively (SC-CAMLR-XXVI, paragraphs 4.57 and 4.59);
- (ii) the catch limit for *D. eleginoides* in Division 58.5.2 west of 79°20'E should be 2 500 tonnes (SC-CAMLR-XXVI, paragraphs 4.73 and 4.74);
- (iii) the catch limits for *D. eleginoides* in these fisheries can be carried over into the 2008/09 fishing season, subject to the conditions detailed in paragraph 4.57.

4.60 The Commission joined the Scientific Committee in thanking France for the resubmission of catch, effort, length and biological data to the CCAMLR database in 2007 and encouraged the continued submission of data to CCAMLR. The Commission also encouraged the estimation of biological parameters for *D. eleginoides* in the French EEZs in Division 58.5.1 (Kerguelen Islands) and Subarea 58.6 (Crozet Island) and the development of stock assessments for these areas including cooperative work between France and Australia. France was also encouraged to continue its tagging program in these fisheries, and to avoid fishing in zones where there were high rates of by-catch of other species (SC-CAMLR-XXVI, paragraphs 4.64, 4.65, 4.79 and 4.80).

4.61 The Commission also noted that France had made significant progress in mitigating seabird by-catch, including the application of area and season closures, and that the Scientific Committee had noted that the CPUE analysis would probably be robust to these changes so long as detailed haul-by-haul data continue to be available (SC-CAMLR-XXVI, paragraphs 4.67 and 4.82).

4.62 The Commission noted that the Scientific Committee was unable to provide management advice for the fishery for *D. eleginoides* in the South African EEZ at Prince Edward Islands. The Commission urged South Africa to adopt the CCAMLR decision rules for estimating yields for this fishery (SC-CAMLR-XXVI, paragraph 4.88).

4.63 The Commission agreed that the prohibition of directed fishing on *D. eleginoides* in Subareas 58.6 and 58.7, and Divisions 58.4.4 and 58.5.1 in areas outside national jurisdiction, should remain in force (SC-CAMLR-XXVI, paragraphs 4.66 and 4.89).

¹ Rajids refer to all skates and rays.

Icefish

4.64 The Commission noted that Members had targeted *C. gunnari* in Subarea 48.3 and Division 58.5.2 in 2006/07, and a total of 3 941 tonnes of *C. gunnari* was taken in the Convention Area (to October 2007), compared with 2 829 tonnes in 2005/06 (SC-CAMLR-XXVI, Tables 1 and 3).

4.65 The Commission endorsed the management advice for 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 2 462 tonnes in 2007/08 and 1 569 tonnes in 2008/09 based on the outcome of the short-term projection, and the catch limit and research requirements between 1 March and 31 May 2008 should be removed (SC-CAMLR-XXVI, paragraph 4.94);
- (ii) the impact of the removal of the specific requirements between March and May in the fishery for *C. gunnari* in Subarea 48.3 should be reviewed by the Scientific Committee and WG-FSA in 2008 (SC-CAMLR-XXVI, paragraph 4.95);
- (iii) the catch limit for *C. gunnari* in Division 58.5.2 should be set at 220 tonnes in 2007/08, and the remaining provisions of Conservation Measure 42-02, Annex B, should be carried forward (SC-CAMLR-XXVI, paragraphs 4.99 and 4.100).

Other finfish species

4.66 The Commission endorsed the Scientific Committee's advice on finfish fisheries in Subareas 48.1 and 48.2 (SC-CAMLR-XXVI, paragraphs 4.103 to 4.108).

4.67 The Commission endorsed the Scientific Committee's advice for the fishery for *D. eleginoides* in Subarea 48.4 that:

- (i) Conservation Measure 41-03 should remain in force until the end of the 2007/08 season;
- (ii) the results of the tagging experiment would be considered by the Scientific Committee and WG-FSA in 2008;
- (iii) based on the current low rates of tagging, the Scientific Committee recommended an extension of the current experiment for one or two further years;
- (iv) further development of this fishery may include a similar tagging experiment for *D. mawsoni* in the southern region of Subarea 48.4 and the introduction of catch limits for by-catch species.

Crab resources

4.68 The Commission noted that there had been no fishery for crab in Subarea 48.3 in 2006/07 and that no proposal to harvest crab had been received for 2007/08. The Commission endorsed the Scientific Committee's management advice that the existing Conservation Measures 52-01 and 52-02 on crabs should be carried forward (SC-CAMLR-XXVI, paragraph 4.173).

Squid resources

4.69 The Commission noted that there had been no fishery for *Martialia hyadesi* in Subarea 48.3 in 2006/07 and that no notification to harvest this species had been received for 2007/08. The Commission endorsed the Scientific Committee's management advice that the existing Conservation Measure 61-01 should be carried forward (SC-CAMLR-XXVI, paragraph 4.175).

By-catch species

4.70 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 in 2006/07.

4.71 The Commission also noted recent work on by-catch species, including the development of mitigation methods (SC-CAMLR-XXVI, paragraphs 4.178 and 4.179) and revised requirements for future data collection (SC-CAMLR-XXVI, paragraph 4.180).

4.72 The Commission endorsed the Scientific Committee's proposal to focus its by-catch work on rajids in 2008/09, and making that season the Year of the Skate (SC-CAMLR-XXVI, paragraphs 4.181 and 4.184). Preparations for the Year of the Skate include:

- (i) a subgroup to communicate intersessionally and coordinate planning;
- (ii) development of region-specific identification guides for skates based on characters which could be easily determined on vessels by observers;
- (iii) modification of the observer data forms (for 2008/09) to enable adequate recording of detailed information about the fate of skates caught;
- (iv) preliminary implementation of a skate tagging program in new and exploratory fisheries in 2007/08, with implementation by all vessels in 2008/09;
- (v) the Secretariat coordinating the skate tagging program in new and exploratory fisheries (including distribution of skate tagging kits, repository for recaptured tags and data archive);
- (vi) where possible in 2007/08, skates should be brought on board prior to release in order to facilitate identification and tagging, and that this practice becomes mandatory in the Year of the Skate (2008/09).

4.73 The Scientific Committee recommended that the Year of the Skate incorporate all *Dissostichus* spp. fisheries in the Convention Area, with a tagging program focusing on new and exploratory fisheries (SC-CAMLR-XXVI, paragraph 4.182).

4.74 The Commission will review the applicability of paragraph 4.72(vi) to subsequent seasons, bearing in mind the advice of the Scientific Committee, knowledge gained during the Year of the Skate and operational considerations.

4.75 The Commission noted that the Scientific Committee had been unable to provide new advice on by-catch limits (SC-CAMLR-XXVI, paragraph 4.185). Therefore, the Commission agreed to maintain the *status quo* for by-catch species catch limits in 2007/08. It encouraged the Scientific Committee to develop advice as quickly as possible on by-catch measures that are set independently from the catch limits of target species.

4.76 However, the Commission noted progress made by the Scientific Committee in developing assessments for by-catch species in Subarea 48.3 and the Ross Sea, and that further data on by-catch species would be collected during the IPY/CAML (Census of Antarctic Marine Life) survey in the Ross Sea which will be conducted by New Zealand in 2008.

4.77 The Commission further noted that the Scientific Committee and its working groups will prepare area-specific guides for the identification of benthic organisms which will enable observers to identify benthic by-catch to the phylum level, and assist in the recording of catch data (SC-CAMLR-XXVI, paragraph 4.190).

4.78 The Commission thanked the Scientific Committee for reviewing the macrourid move-on rule in Conservation Measure 33-03, paragraph 5 (CCAMLR-XXV, paragraph 4.67). The Commission endorsed the Scientific Committee's advice to introduce a threshold level above which the macrourid catch would trigger the move-on rule (SC-CAMLR-XXVI, paragraphs 4.187 and 4.188). The Commission agreed to amend paragraph 5 of Conservation Measure 33-03 to read:

‘If the catch of *Macrourus* spp. taken by a single vessel in any two 10-day periods in a single SSRU exceeds 1 500 kg in each 10-day period and exceeds 16% of the catch of *Dissostichus* spp. by that vessel in that SSRU in those periods, the vessel shall cease fishing in that SSRU for the remainder of the season.’ (A 10-day period is defined as day 1 to day 10, day 11 to day 20 or day 21 to the last day of the month.)

4.79 The Commission noted that the Scientific Committee planned to review this move-on rule in 2008, particularly in respect of effects from changes in macrourid catches and catch rates (SC-CAMLR-XXVI, paragraph 4.189).

Scientific research exemption

4.80 The Commission noted that Members would conduct the following scientific surveys in 2008 using research vessels (SC-CAMLR-XXVI, paragraph 9.1):

- (i) bottom trawl survey in Subarea 48.3 by the UK
- (ii) bottom trawl survey in Division 58.5.2 by Australia

- (iii) CCAMLR-related IPY/CAML surveys by Germany, Japan, New Zealand, Norway and the UK.

4.81 The Commission joined the Scientific Committee in commending Members for their commitment to the IPY and CAML, and recognised the importance of these surveys for the future work of CCAMLR.

4.82 The Commission noted that the Scientific Committee had discussed two notifications from Japan and Australia respectively to conduct *Dissostichus* spp. longline research in 2007/08 using commercial vessels under the provisions of Conservation Measure 24-01 (SC-CAMLR-XXVI, paragraphs 9.3, 9.5 and 9.8).

4.83 The Commission recalled that the purpose of allowing research fishing under Conservation Measure 24-01 using commercial fishing vessels was to collect data which would lead to an assessment of fish stocks in the area surveyed (SC-CAMLR-XXVI, paragraphs 9.3, 9.5 and 9.8). However, the Commission recognised the need to restrict initial effort such as provided in Conservation Measure 41-09 (paragraph 12) to prevent over-harvesting before sufficient data are obtained to conduct an assessment.

4.84 The Commission endorsed the Scientific Committee's advice and agreed that (SC CAMLR-XXVI, paragraphs 9.5, 9.6, 9.8 and 9.9):

- (i) the Japanese survey in Divisions 58.4.4a and 58.4.4b should be limited to a total catch of 80 tonnes of *Dissostichus* spp., with a limit of 20 tonnes of *Dissostichus* spp. per SSRU surveyed. In addition, in order to increase CCAMLR's knowledge of the current stock status in this area:
 - (a) research sets should involve a random element;
 - (b) detailed biological data should be collected from the target and all by-catch species (individual fish length, weight, sex, reproductive stage, otoliths for ageing studies and tissue samples for genetic studies);
 - (c) representative length-frequency data should be collected from each haul;
 - (d) information should be reported on the trotline fishing system used and the design of the survey, and the depth of fishing recorded at each set;
 - (e) tagging of *Dissostichus* spp. should be conducted at a minimum rate of three fish per tonne of green weight caught;
- (ii) the catches taken in the Australian survey in Division 58.4.3b will be considered as part of the catch limits agreed for the fishery in that division in 2007/08 (see also paragraph 13.62). In addition, in order to increase CCAMLR's knowledge of the current stock status in this area:
 - (a) the survey should proceed in accordance with the research and data collection plan proposed in the notification;
 - (b) research sets should be deployed across the entire BANZARE Bank and in accordance with the notified standardised random design.

4.85 The Commission noted that the vessels engaged in the Japanese and Australian surveys will carry scientific observers appointed in accordance with the Scheme of International Scientific Observation.

4.86 The Commission noted the dilemma identified by the Scientific Committee that, without surveys, the status of stocks would remain unknown, but that the catch required to complete a survey may further deplete the stocks under investigation (SC-CAMLR-XXVI, paragraph 9.11; see also discussion under Agenda Item 12). The Commission noted that a review of Conservation Measure 24-01 may be needed.

4.87 Taking into account this advice from the Scientific Committee, and in order to address the dilemma identified by the Scientific Committee and to consider how best to manage research fishing (Conservation Measure 24-01, paragraph 3) on *Dissostichus* spp. using commercial vessels, the Commission requested the Scientific Committee to review and provide advice next year on the implementation of Conservation Measure 24-01. It also requested that the Scientific Committee consider the design of research programs undertaken by commercial vessels, and that Members ensure that appropriate scientists attend the meetings of WG-FSA.

Secretariat supported activities

4.88 The Commission noted the Secretariat's work in data management in 2006/07 and measures taken to maintain the integrity of CCAMLR data (SC-CAMLR-XXVI, paragraphs 13.1 to 13.4). The volume and complexity of this work continued to increase and the Scientific Committee had noted the importance of the Secretariat's support to the work of the Scientific Committee and its working groups.

4.89 The Commission endorsed the following advice from the Scientific Committee in relation to CCAMLR data, and agreed to the:

- (i) implementation of the three-step procedure to facilitate the submission of STATLANT data by Members and improve the quality of these data (SC-CAMLR-XXVI, paragraphs 13.5 to 13.11);
- (ii) revision of the longline haul-by-haul catch and effort data form (SC-CAMLR-XXVI, paragraph 13.12);
- (iii) implementation of routine error checking of vessel positions reported in haul-by-haul catch and effort and observer biological and tagging data (SC-CAMLR-XXVI, paragraph 13.15);
- (iv) development of metadata for fishery and scientific datasets held in the CCAMLR database, and public release of these metadata in accordance with the Rules for Access and Use of CCAMLR Data (SC-CAMLR-XXVI, paragraphs 13.16 to 13.19).

4.90 The Commission endorsed the following advice from the Scientific Committee in relation to CCAMLR publications, and agreed to the:

- (i) electronic dissemination of *CCAMLR Science* via the CCAMLR website (SC-CAMLR-XXVI, paragraph 13.22);
- (ii) language support for *CCAMLR Science* in 2008 (SC-CAMLR-XXVI, paragraph 13.22);
- (iii) consideration in 2008 of proposals for special issues of *CCAMLR Science*, including the publication of the results of the CCAMLR-IWC Workshop and the CCAMLR Species Profiles (SC-CAMLR-XXVI, paragraph 13.23);
- (iv) review of the publication policy, including the procedure for selecting papers, of *CCAMLR Science* in 2008 (SC-CAMLR-XXVI, paragraphs 13.24 and 13.25).

Scientific Committee activities

4.91 The Chair of the Scientific Committee, on behalf of the Scientific Committee, accepted with great pleasure the invitation by the Russian Federation, made during the Commission meeting, to host the next meetings of WG-EMM, the ad hoc Technical Group for At-Sea Operations (TASO) and WG-SAM in Moscow in July 2008.

4.92 The Commission endorsed the Scientific Committee's approach to developing a long-term science plan (SC-CAMLR-XXVI, paragraphs 14.1 to 14.11). The Commission also endorsed the work plan for the Scientific Committee and its working groups and subgroups in 2007/08 (SC-CAMLR-XXVI, paragraphs 14.12 to 14.24), including:

- WG-EMM Predator Survey Workshop in Hobart, 16 to 20 June 2008 (Convener – Dr C. Southwell (Australia));
- meeting of WG-SAM in Moscow, July 2008 (Convener – Dr A. Constable (Australia));
- two-day scoping workshop of TASO, held in association with the meetings of WG-SAM and WG-EMM, to begin the work of the ad hoc technical group and identify the terms of reference and long-term work plan (Co-conveners – Mr C. Heinecken and Dr D. Welsford (Australia));
- meeting of WG-EMM in Moscow, July 2008 (Convener – Dr G. Watters (USA));
- Joint CCAMLR-IWC Workshop in Hobart, August 2008, to consider, *inter alia*, the types of information needed for models on the Antarctic marine ecosystem that could be developed for providing management advice (SC-CAMLR-XXVI, paragraphs 14.16 to 14.20);

- meetings of WG-FSA and ad hoc WG-IMAF in Hobart, Australia, from 13 to 24 October 2008 (Convener WG-FSA – Dr C. Jones (USA); Co-conveners WG-IMAF – Ms K. Rivera (USA) and Mr N. Smith (New Zealand)). WG-IMAF will also hold a one-day workshop;
- SC-CAMLR-XXVII scheduled in Hobart from 27 to 31 October 2008;
- preparations for the Year of the Skate (paragraph 4.79).

4.93 The Commission endorsed the Scientific Committee's decision that all observers invited to SC-CAMLR-XXVI would be invited to participate in SC-CAMLR-XXVII.

4.94 The Commission noted that:

- Mr L. Pshenichnov's (Ukraine) term as Vice-Chair of the Scientific Committee ended in 2007 and the Scientific Committee had unanimously elected Mr S. Iversen (Norway) to the position for a term of two regular meetings (2008 and 2009).
- Dr Jones will replace Dr S. Hanchet (New Zealand) as convener of WG-FSA;
- Dr Watters will replace Dr K. Reid (UK) as convener of WG-EMM;
- WG-SAM will now be convened by Dr Constable.

4.95 The Commission joined the Scientific Committee in thanking Mr Pshenichnov, outgoing Vice-Chair of the Scientific Committee, Dr Hanchet, outgoing Convener of WG-FSA and Dr Reid, outgoing Convener of WG-EMM, for their significant contributions to the work of the Scientific Committee. The Commission joined the Scientific Committee in welcoming Mr Iversen and Drs Jones, Watters and Constable to their new portfolios.

4.96 The Commission joined the Scientific Committee in conveying delegates' best wishes to the Science and Compliance Officer, Dr E. Sabourenkov, who is retiring in early 2008, after serving in the Secretariat for 24 years. Dr Sabourenkov joined the Secretariat in 1984 and has been closely involved in the work of the Commission and the Scientific Committee. The Commission and the Scientific Committee thank Dr Sabourenkov for his dedicated service and expert contributions to the work of CCAMLR.