4.220 With respect to other exploratory longline fisheries, the Scientific Committee draws the attention of the Commission to:

(i) consideration of the size of SSRUs to be no more than 10° longitude wide (paragraph 4.203);

(ii) consideration of changes to the research plan (paragraph 4.214);

(iii) measures contained in Conservation Measure 41-04 for Subarea 48.6 are recommended to remain in force for the coming season also taking account of advice in (paragraph 5.38).

Crab Resources

4.221 No target fishery for stone crabs was carried out in 2002/03 and no proposal for the harvest of crabs has yet been received by CCAMLR for the 2003/04 season. The Scientific Committee recommended that existing Conservation Measures 52-01 and 52-02 on stone crabs should remain in force.

Squid Resources

Martialia hyadesi (Subarea 48.3)

4.222 No target fishery for squid was carried out in 2002/03 and no new request has been submitted to CCAMLR to continue exploratory fishing on this species. The Scientific Committee recommended that the existing Conservation Measure 61-01 for the squid *Martialia hyadesi* should remain in force.

INCIDENTAL MORTALITY

5.1 The Scientific Committee reviewed the report of ad hoc WG-IMAF. It endorsed the report and its conclusions and the plan of intersessional work (Annex 5, Appendix E), subject to the comments set out below, and drew these to the attention of the Commission.

Incidental Mortality of Seabirds during Regulated
Longline Fishing in the Convention Area in 2003

5.2 The Scientific Committee noted that:

(i) for Subarea 48.3 the total estimated seabird by-catch in 2003 was only 8 birds at a rate of 0.0003 birds/thousand hooks, even lower than the values of the last three years (Annex 5, paragraphs 6.8 and 6.9 and Table 6.3);

(ii) within the South African EEZs in Subareas 58.6 and 58.7, the total estimated seabird by-catch was seven birds at a rate of 0.003 birds/thousand hooks, maintaining the substantial reduction from the situation two years ago (Annex 5, paragraphs 6.10 and 6.11 and Table 6.3). The causes of this marked improvement are unknown, although fishing effort was still reduced (Annex 5, paragraph 6.11);

(iii) no incidental mortality of seabirds was observed in Subareas 88.1 (for the seventh successive year), and 88.2 (for the second successive year), nor in Divisions 58.4.2 and 58.5.2 (Annex 5, paragraphs 6.12 to 6.14), presumably due to strict compliance with conservation measures.

5.3 The Scientific Committee particularly noted that the estimated total of seabirds killed (15) represents the lowest estimated seabird by-catch in regulated longline fisheries yet reported for these parts of the Convention Area. It recollected that the comparable figure for 1997, when CCAMLR started to implement conservation measures to address the problem, was 6 589 seabirds killed. It thanked all those involved in conducting and managing fishing operations for their efforts in achieving this excellent result.

5.4 The Scientific Committee noted with concern that no data from longline fishing in French EEZs in Subarea 58.6 and Division 58.5.1 had been submitted for 2003, nor, as requested and promised last year, for 2002 (SC-CAMLR-XXI, paragraph 5.5; Annex 5, paragraphs 6.14 to 6.16). However, it thanked France for sending a scientist to the ad hoc WG-IMAF meeting, for providing information on seabird incidental mortality in these areas for the last two years and a detailed summary on French actions to address the problem (Annex 5, paragraphs 6.19 and 6.20), to be supplemented by a paper on this topic for the Commission meeting (CCAMLR-XXII/57).

5.5 The Scientific Committee noted with serious concern that in the French EEZs in Subarea 58.6 and Division 58.5.1 in 2001/02, 12 057 birds (94% white-chinned petrels) had been killed during setting of 19 million hooks, at a rate of 0.635 birds/thousand hooks, and that in 2002/03, 13 784 birds (93% white-chinned petrels) had been killed during setting of 30 million hooks, at a rate of 0.456 birds/thousand hooks (Annex 5, paragraph 6.19).

5.6 It noted that:

(i) these levels of seabird by-catch are the highest ever reported for any part of the Convention Area;

(ii) the by-catch rates are amongst the highest ever reported for the Convention Area (exceeded only by the value of 0.52 birds/thousand hooks for Subareas 58.6 and 58.7 in 1997 – prior to the implementation of effective mitigation measures in the South Africa EEZs – and those of 0.736 birds/thousand hooks and 2.937 birds/thousand hooks in the French EEZs in 1999 and 2000 respectively (SC-CAMLR-XX, paragraph 4.32);

(iii) the rates and levels of seabird by-catch in the French EEZs are likely unsustainable for the main seabird population involved (Annex 5, paragraph 6.22).

5.7 The Scientific Committee endorsed the recommendation that for the longline fisheries in the French EEZs in Subarea 58.6 and Division 58.5.1:

(i) all current and outstanding data be submitted to CCAMLR as soon as possible for analysis and evaluation in conjunction with any similar analyses by French scientists (Annex 5, paragraph 6.24);

(ii) these fisheries be managed in strict compliance with Conservation Measure 25-02, together with additional mitigation (as specified in Annex 5, paragraphs 6.28 to 6.30), in respect of line weighting for autoliners, streamer line design and deployment, offal discharge and use of scaring cannons;

(iii) trials are conducted in the area of existing methods successful in New Zealand at mitigating against by-catch of white-chinned petrels (Annex 5, paragraph 6.31);

(iv) exchange of fishers takes place between New Zealand and France (Annex 5, paragraph 6.32).

5.8 France responded by stating that it had intensified its efforts to rectify the situation (see Annex 5, paragraph 6.20), involving use and trials of many methods to deter seabirds and by implementing a variety of regulations, including month-long closure of the fishery and vessel-specific by-catch avoidance requirements, all designed to help fishers avoid catching birds. It noted that the seabird by-catch rate in 2003 was significantly lower than in 2002 and that indications from fishing at the start of 2004 were that by-catch rates were lower still.

5.9 However, recognising the gravity of the situation, the potential benefits of collaboration (particularly with fishers and other experts from New Zealand) to address the key elements of the problem and the recognition that measures to ensure rapid sink rates of autolines are essential, France indicated that it intended to implement the recommendations of CCAMLR as summarised in Annex 5, paragraphs 6.28 and 6.29, to the extent that the operational characteristics of its vessels permitted. It further noted that two of its fishing masters would be attending the Commission meeting, facilitating further discussion concerning implementation of these and related recommendations of the Scientific Committee (e.g. Annex 5, paragraphs 6.31 and 6.32).

5.10 The Scientific Committee welcomed these positive responses from France and looked forward to receiving appropriate data and reports in time for the meetings of the Scientific Committee and its working groups next year.

Implementation of Conservation Measures 24-02, 25-02 and 25-03

5.11 The Scientific Committee noted with approval that reports of scientific observers and logbook data indicated that compliance with these conservation measures, relating to mitigation of seabird by-catch, was substantially improved in all subareas and divisions and was again complete in Subareas 88.1 and 88.2. In particular, compliance with streamer line design was now 92% (compared with 86% and 66% in the last two years); night setting compliance was 98% in Subareas 48.3, 58.6 and 58.7; Spanish system line weighting was

100% in Subarea 48.3 (compared with 63% and 60% in the last two years); and the required autoline sink rate of 0.3 m/s was met by all vessels in Subareas 88.1, 88.2 (south of 65°S) and Division 58.4.2 (Annex 5, paragraphs 6.34 to 6.57 and Tables 6.5 to 6.7).

5.12 South Africa re-emphasised its concern relating to compliance failure of vessels fishing in its EEZs in Subareas 58.6 and 58.7 and indicated that it was verifying the circumstances concerning offal discharge by *South Princess* (Annex 5, paragraph 6.37); it would provide any further relevant information as soon as possible.

5.13 The Scientific Committee noted that in relation to overall compliance with Conservation Measure 25-02, 14 of the 29 vessels (48%), including 8 of 19 in Subarea 48.3, appeared to have fully complied with all measures at all times throughout the Convention Area (Annex 5, paragraph 6.45 and Table 6.7). This compares with 3 of 21 vessels last year (14%).

Research into and Experiences with Longline Mitigating Measures

5.14 The Scientific Committee noted the extensive review of current methods, initiatives and results, especially in relation to improving practices in the Convention Area and to revising the specification of Conservation Measure 25-02 (Annex 5, paragraphs 6.66 to 6.108). It welcomed the successful outcome of trials of integrated weight (IW) longlines, whereby in New Zealand waters by-catch on IW lines and control lines were 1 and 81 white-chinned petrels respectively (Annex 5, paragraph 6.75).

5.15 In respect of the development of IW longlines, the Scientific Committee recollected that this had resulted from a pioneering initiative within CCAMLR between Australian scientists, New Zealand fishers and a Norwegian gear manufacturer. The outcome was becoming one of considerable benefit both to seabirds and to fishers and the fishing industry; it is likely to have global application. The Scientific Committee congratulated all Members involved in the work so far and encouraged other Members to investigate the potential use of IW longlines in their fisheries.

5.16 To enable vital experimental work to take place in the Convention Area in 2003/04, the Scientific Committee endorsed strong support for a trial (the details of which, set out in WG-FSA-03/17, had been endorsed by both WG-IMAF and WG-FSA) of IW lines in Subareas 88.1 and 88.2 in 2003/04, together with exemptions from appropriate conservation measures, in order to develop recommendations for autoline weighting as part of Conservation Measure 25-02 (Annex 5, paragraphs 6.86 to 6.89).

5.17 The Scientific Committee noted the extensive review of most elements of Conservation Measure 25-02, including explaining the basis for the proposed changes to the conservation measure (Annex 5, paragraphs 6.92 to 6.108).

5.18 In response to questions from the Republic of Korea and Russia, it was emphasised that the proposed revisions to the conservation measure are designed to maintain clear and verifiable targets for the mandatory elements of the measure while allowing some flexibility in how these targets are achieved, especially with streamer line design and deployment.

5.19 The Scientific Committee endorsed the proposed revisions to Conservation Measure 25-02, together with the proposed draft text of the measure (Annex 5, Appendix F).

Assessment of Incidental Mortality of Seabirds during
IUU Longline Fishing in the Convention Area

5.20 The Scientific Committee noted that:

(i) the method proposed last year for improving the calculation of estimates of seabird by-catch associated with IUU fishing for toothfish was implemented this year for all parts of the Convention Area where IUU by-catch had been reported (Annex 5, paragraphs 6.112 to 6.116; full details are in SC-CAMLR-XXII/BG/19);

(ii) a similar approach was applied to the historical data on toothfish removals taking account of information incorporated at the start of this year's meeting;

(iii) the estimates (median values with the 95% confidence interval range in parentheses) of potential IUU seabird by-catch by area for 2003 (SC-CAMLR-XXII/BG/19) were:

Subarea 48.3:	0 seabirds
Subarea 58.6:	1 622 (1 329–4 330) seabirds
Subarea 58.7:	655 (537–1 749) seabirds
Division 58.5.1:	13 284 (10 888–35 470) seabirds
Division 58.5.2:	1 300 (1 066–3 472) seabirds
Division 58.4.4:	724 (593–1 932)seabirds
Subarea 88.1:	0 seabirds;

(iv) for 2003, overall estimated potential values, at 17 585 (range 14 412–46 954) seabirds killed, are about 70% of equivalent values for 2001 and 2002 and the lowest value since these estimates commenced in 1996 (Annex 5, paragraph 6.119 and Table 6.8);

(v) since 1996, an estimated potential total of 187 155 (range 152 381–546 567) seabirds, comprising 41 897 (range of 33 904–132 011) albatrosses, 7 417 (6 059–20 742) giant petrels and 116 130 (95 728–309 932) white-chinned petrels, have been killed in IUU longline fisheries in the Convention Area (Annex 5, paragraph 6.122 and Table 6.8).

5.21 The Scientific Committee endorsed the advice that:

(i) such levels of mortality remain entirely unsustainable for the populations of albatrosses, giant petrels and white-chinned petrels breeding in the Convention Area (Annex 5, paragraph 6.126), many of which are declining at rates where extinction is possible;

(ii) the Commission should continue to take stringent measures to combat IUU fishing in the Convention Area (Annex 5, paragraph 6.127).

5.22 The Scientific Committee noted that values for the current and previous years (summarised in Annex 5, Table 6.8) are about one half of those derived from using the previous method (Annex 5, paragraph 6.123), solely because of the changes in the analytical method, rather than reflecting any new information or evaluation. It noted the advice that by-catch rates associated with IUU fishing being used for subareas and divisions in the Indian Ocean were lower than many of the rates reported in regulated fisheries in this area in the last four years. It endorsed the suggested review of seabird by-catch rates used to characterise IUU longline fisheries (Annex 5, paragraph 6.123).

5.23 Dr Constable observed that the new method for deriving estimates of seabird by-catch rates for applying to IUU fishing activities was a considerable improvement, in that it allowed confidence intervals to be placed on the estimate – currently of the median (50%) value. He thanked the Working Group for implementing this but noted that it might be preferable, in addition or instead, to calculate and use the level at which there was an 80% chance that the seabird by-catch levels were at or below a particular value. The Scientific Committee commended this suggestion to the Working Group when undertaking this work next year.

Incidental Mortality of Seabirds during Longline Fishing outside the Convention Area

5.24 The Scientific Committee noted that no new data were reported this year. It asked Members to respond next year to this standing request for information on Convention Area seabirds killed in nearby areas (Annex 5, paragraph 6.131).

Research into the Status and Distribution of Seabirds at Risk

5.25 The Scientific Committee noted that submitted data on:

(i) size and trends of populations of albatross species and of *Macronectes* and *Procellaria* petrels vulnerable to interactions with longline fisheries;

(ii) the foraging ranges of populations of these species adequate to assess overlap with areas used by longline fisheries;

are still insufficient for a comprehensive review of these topics. All Members are requested to submit relevant data to next year's meeting (Annex 5, paragraphs 6.133 to 6.137), including information on the extent and location of their seabird by-catch collections to facilitate the development of collaborative research to investigate the origins of birds killed (Annex 5, paragraph 6.158).

5.26 The Scientific Committee noted that important new data on the status and trends of populations of albatrosses and petrels, including changes to their global conservation status (Annex 5, paragraphs 6.138 to 6.155) were discussed and summarised under Agenda Item 6.

International and National Initiatives relating to Incidental Mortality of Seabirds in relation to Longline Fishing

5.27 The Scientific Committee noted reports on recent and new international initiatives under the auspices of:

(i) IFF2 – meeting in Hawaii, USA, 19 to 22 November 2002, including a request for CCAMLR Members to consider hosting IFF3 (Annex 5, paragraphs 6.161 to 6.166);

(ii) ACAP – potential entry into force during 2004 and support for attendance and representation by CCAMLR (Annex 5, paragraphs 6.167 to 6.170);

(iii) FAO-NPOAs – noting some progress in development of plans (especially by New Zealand, Australia, Brazil, UK, and South Africa) but very limited progress in implementation (Annex 5, paragraphs 6.171 to 6.173).

5.28 In respect of collaboration with relevant RFMOs to address problems of by-catch of seabirds in longline fisheries in areas adjacent to the Convention Area (Annex 5, paragraphs 6.177 to 6.192), the Scientific Committee noted, and/or endorsed as appropriate, the following:

(i) CCSBT – the report from the November 2001 meeting of the ERSWG had been received (Annex 5, paragraphs 6.179 and 6.180);

(ii) ICCAT – adopted a resolution on incidental mortality of seabirds at its November 2002 meeting; however concern was expressed that collecting and reporting data on incidental mortality had no specified timeframe for implementation (Annex 5, paragraphs 6.181 to 6.183);

(iii) IOTC – no formal response yet to CCAMLR's request but a working party on by-catch has been established to which input from CCAMLR in respect of potential by-catch of Convention Area seabirds is recommended (Annex 5, paragraphs 6.184 to 6.187);

(iv) IATTC – no observer programs in areas where Convention Area birds are likely to be caught (Annex 5, paragraphs 6.188 and 6.189);

(v) WCPFC – likely to enter into force in 2004; CCAMLR should offer to provide assessments of the potential risk to CCAMLR Convention Area seabirds by vessels fishing in the WCPFC Area (Annex 5, paragraph 6.190);

(vi) reaffirmation of the desire to organise effective communication and representation of CCAMLR interests at meetings of relevant RFMOs, particularly via appropriate briefing for Members acting as CCAMLR observers (Annex 5, paragraph 6.191);

(vii) recent initiatives addressing by-catch issues of albatrosses and petrels breeding in the Convention Area by New Zealand, USA and BirdLife International (Annex 5, paragraphs 6.193 to 6.199).

5.29 In respect of Annex 5, paragraph 6.173, Japan stated that it had submitted its NPOA to FAO before the COFI meeting in 2003.

5.30 Dr Naganobu reported that all Japanese southern bluefin tuna longliners operating south of 30°S in the Pacific, Indian and Atlantic Oceans use a tori pole (streamer line) at all times; as this requirement is mandatory for all Commission parties of CCSBT. Furthermore, although some albatross and petrel species may be taken incidentally in the tuna longline fishery operating off Brazil, north of 30°S, few Japanese longliners have operated in this area in recent years. As incidental by-catch of seabirds is quite rare in the subtropical-tropical Indian Ocean he believed that the management of the southern bluefin tuna longline fishery is the most important task for the reduction of incidental take of seabirds in Japanese fisheries in the Southern Hemisphere.

5.31 Dr E. Fanta (Brazil) noted that a summary of the development of the Brazilian NPOA-Seabirds, of trials of seabird mitigation measures, of requirements for 100% scientific observer coverage on chartered vessels fishing in Brazilian waters and of licence-related incentives for good environmental fishing practice, is provided in SC-CAMLR-XXII/BG/31.

5.32 Prof. Moreno reported that funding had now been acquired to enable a Chilean NPOA-Seabirds to be developed (Fondo de Investigación Pesquera (Chile) (FIP) 2003-21) (including invited experts from Australia, New Zealand and the USA). He indicated the importance of this given that, based on 25% observer coverage, estimates of seabird by-catch in toothfish fisheries within the Chilean EEZ south of 47°S include 1 700 black-browed albatrosses killed annually.

5.33 In respect of the ICCAT resolution, clarification was sought from the European Community (the originator of the resolution eventually adopted) as to why timeframes for implementation had not been specified, as contained in the original resolutions proposed by Brazil, China, Japan and the Republic of Korea. Information on the progress of the European Community's NPOA-Seabirds was also requested.

Incidental Mortality of Seabirds in relation
to New and Exploratory Fisheries

5.34 The Scientific Committee noted that:

(i) of the 21 exploratory longline fisheries approved for 2002/03, only five, in Subareas 88.1 and 88.2 and Division 58.4.2, were operational; no seabird by-catch was reported in any of these fisheries (Annex 5, paragraphs 6.204 and 6.205);

(ii) the assessment of potential risk of interactions between seabirds and longline fisheries for all statistical areas in the Convention Area was reviewed, revised and provided as advice to the Scientific Committee and Commission in SC-CAMLR-XXII/BG/17 (Annex 5, paragraphs 6.201 to 6.203). The only changes to advice in relation to levels of risk of seabird by-catch for any part of the Convention Area were for Divisions 58.4.1 and 58.4.2 (Annex 5,

paragraph 6.207). However, the potential for exemptions for daylight setting in areas of lower risk to seabirds has been clarified and incorporated into the advice (Annex 5, paragraphs 6.208 to 6.211);

(iii) the 31 proposals by 14 Members for new and exploratory longline fisheries in 15 subareas/divisions of the Convention Area in 2003/04 were addressed, in relation to advice in SC-CAMLR-XXII/BG/17 and Annex 5, Table 6.9 (Annex 5, paragraphs 6.206 and 6.207).

5.35 The Scientific Committee noted that the only potential problems apparently needing resolving in respect of issues relating to incidental mortality of seabirds (Annex 5, Table 6.9 and paragraph 6.207) are:

(i) inconsistencies in all Namibian proposals with respect to their intention to comply with recommended seabird by-catch mitigation measures, particularly Conservation Measure 25-02, and in respect of fishing seasons;

(ii) insufficient detail in the Korean proposals for Subareas 88.1 and 88.2 to assess intended compliance with seabird by-catch mitigation measures;

(iii) the intent in the Norwegian proposal to use only one observer in Subareas 88.1 and 88.2;

(iv) the intention in the Argentinian proposal for Division 58.5.1 and Subareas 58.6 and 58.7 to fish outside the recommended fishing season.

5.36 In response:

(i) Namibia indicated that notifications CCAMLR-XXII/29 and XXII/31 had now been withdrawn; subsequent discussion established that in respect of CCAMLR-XXII/30 (for Subarea 48.6), Namibia intended to comply in full with Conservation Measure 25-02;

(ii) it was reported that discussions with the Republic of Korea established that it intended to comply in full with Conservation Measure 25-02, together with such other related conservation measures as might be required for longline fishing in Subareas 88.1 and 88.2;

(iii) Argentina indicated that for all its notifications, including those for Division 58.5.1 and Subareas 58.6 and 58.7, it intended to comply with whatever fishing season was established by the Commission for 2003/04, together with all relevant conservation measures;

(iv) Japan asked that the entry in Annex 5, Table 6.9 in respect of the fishing season specified in its notification for fishing in Subarea 88.1 be corrected to read '1 December 2003 to 31 August 2004', as in the original notification.

5.37 The Scientific Committee noted that the integrated longline weighting experiment proposed for Subarea 88.1, following the experimental design provided in WG-FSA-03/17

and endorsed earlier (paragraph 5.16), would require a specific conservation measure to provide exemption, to the vessels participating in the experiment, for the use of unweighted longlines and to specify appropriate bird by-catch limits for the duration of the experiment.

5.38 The Scientific Committee also noted that in respect of requests to fish during daytime, Conservation Measure 24-02 might need to be amended to permit exemptions from the requirement to set longlines at night, as prescribed in paragraph 3 of Conservation Measure 25-02, for Subareas 48.1, 48.2, 48.4, 48.5, and 48.6 north of 60°S, and Divisions 58.4.1 and 58.4.3a and 58.4.3b (Annex 5, paragraphs 6.208 to 6.211).

5.39 The Scientific Committee endorsed the definitions of the nature and status of birds caught (Annex 5, paragraphs 6.214 to 6.217), especially in relation to limits on seabird by-catch; it noted that there may be a need to review appropriate levels of observation to detect accurately low levels of bird by-catch (Annex 5, paragraph 6.218).

Other Incidental Mortality

5.40 The Scientific Committee noted that:

(i) in the Convention Area in 2003, one southern elephant seal was reported killed in the longline fishery in Subarea 48.3 and three southern elephant seals were reported killed by a longline vessel in Division 58.5.2 (Annex 5, paragraph 6.219);

(ii) data were provided on interactions between cetaceans and longline fishing, including quantitative estimates of toothfish removals from fishing lines for Subarea 48.3 and for Chilean waters (Annex 5, paragraphs 6.220 and 6.221);

(iii) Poland reported that its krill trawl fishing vessel in Area 48 caught 73 Antarctic fur seals of which 26 were killed (Annex 5, paragraph 6.226);

(iv) reports of scientific observers on krill fishing vessels are unavailable until the close of the krill fishing season, so information from other vessels is lacking.

5.41 Australia reported that, in addition to the seal by-catch reported in paragraph 5.40, as noted in its Member's Activities Report, two Antarctic fur seals and two additional southern elephant seals had been killed in finfish trawl operations in Division 58.5.2.

5.42 The Representative of the Republic of Korea stated that a Korean krill trawler fishing in Area 48 may have caught a number of fur seals at its initial fishing stage, followed by a significant reduction of the capture rate after making escape holes in the net. Details would appear in the report of the scientific observer. However, Korea requested that any Member with experience at avoiding catching seals in trawls or with releasing seals that had been caught, should make this information available.

5.43 The Scientific Committee noted a similar request by WG-FSA (Annex 5, paragraph 6.230) and encouraged Members with relevant experience to make this widely available, including through the IMAF page on the CCAMLR website.

5.44 The Scientific Committee recognised the need to address how best to arrange appropriate reporting of incidental mortality from the krill fishery for consideration at WG-FSA (Annex 5, paragraphs 6.226 to 6.231).

5.45 The Scientific Committee noted that:

(i) in the trawl fishery for *C. gunnari*/*D. eleginoides* in Division 58.5.2, 15 seabirds were entangled of which six were killed (Annex 5, paragraph 6.232);

(ii) in the *C. gunnari* trawl fishery in Subarea 48.3, 43 seabirds were entangled, at least 36 fatally (Annex 5, paragraph 6.233);

(iii) although levels of seabird by-catch mortality in the trawl fishery in Subarea 48.3 have reduced from 93 in 2001 to 73 in 2002 to 36 in 2003, corresponding by-catch rates of 0.25, 0.15 and 0.20 birds per haul, show no clear trend (Annex 5, paragraphs 6.234 and 6.235 and Table 6.10);

(iv) considerable new data and information relating to by-catch mitigation in this fishery had been acquired from the reports of scientific observers (Annex 5, paragraphs 6.237 to 6.240).

5.46 The Scientific Committee endorsed the recommendation of WG-FSA that:

(i) data continue to be collected to improve mitigating measures for the icefish trawl fisheries in Subarea 48.3;

(ii) Conservation Measure 25-03 should be revised to take account of additional mitigation provisions deriving from recent experiences (Annex 5, paragraphs 6.244, 6.251 and 6.252);

(iii) review of the current interim seabird by-catch limit for this fishery might be appropriate (Annex 5, paragraphs 6.246 and 6.247);

(iv) review of measures relating to bottom trawl gear may still be appropriate (Annex 5, paragraphs 6.241 to 6.243).

5.47 Dr Kock noted that in the *C. gunnari* trawl fishery in Subarea 48.3, 15 of the 16 birds killed by the *Sil* had died during a single haul, clearly due to defective operating procedures.

5.48 It was noted that one of the proposed changes to Conservation Measure 25-03 sought to take account of these and similar problems (Annex 5, paragraphs 6.252(iii)).

5.49 In respect of advice regarding use of bottom trawl gear, Dr Constable observed that relevant comments exist in Annex 5, paragraphs 5.176, 5.294, 5.295 and 6.241 to 6.243. He suggested that when reviewing this matter WG-FSA should consider the use of open and closed areas as a basis for trials to assess the effects of bottom trawls in order to try to balance the reduction of by-catch of non-target species with impacts on the benthos.

5.50 Dr Kock expressed reservations at recommencing bottom trawling in Subarea 48.3, even in an experimental context.

5.51 The Scientific Committee endorsed the Working Group recommendation that issues relating to the use of bottom trawl gear be examined for all CCAMLR fishing areas in a wider context, both intersessionally and at WG-FSA. Members are requested to submit relevant data and information to WG-FSA intersessionally (Annex 5, paragraph 5.295).

5.52 Prof. Beddington reiterated his concern that when considering the nature and extent of measures to mitigate by-catch of non-target species, the potential levels of impact on the populations concerned was not always taken into full consideration. Thus the situation was very different with respect to albatrosses, where many populations were of globally threatened species in steep decline, compared to Antarctic fur seals whose populations were still increasing very rapidly.

5.53 Concerning the potential revision of *Fish the Sea Not the Sky*, now that the English version is out of print, the Scientific Committee endorsed the recommendation that it might be replaced by appropriate poster material (Annex 5, paragraphs 6.253 to 6.255). It requested the Science Officer, in consultation with WG-IMAF members, to prepare a draft of appropriate material. In the meantime, the English version of the booklet should be made available on the CCAMLR website.

5.54 The Scientific Committee thanked the members of ad hoc WG-IMAF for their work, both intersessional and at the meeting, and for producing such a comprehensive report.

Advice to the Commission

5.55 This section attempts to distinguish between general advice (which the Commission may wish to note and/or endorse) and specific advice (which includes requests to the Commission for action or advice, as well as topics which may contain the potential for action now or in the near future).

General Advice

5.56 The Commission was requested to note:

(i) the exceptionally low levels and rates of seabird by-catch in regulated longline fisheries in most parts of the Convention Area in 2003 (paragraphs 5.2 and 5.3);

(ii) serious concern at levels and rates of seabird by-catch in French EEZs in Subarea 58.6 and Division 58.5.1 (paragraphs 5.5 and 5.6);

(iii) the very positive assessments of implementation of Conservation Measure 25-02 in 2003 (paragraphs 5.11 to 5.13);

(iv) progress with research on mitigation measures, especially integrated weighting of longlines, relevant to Conservation Measure 25-02 (paragraphs 5.14 and 5.15);

(v) estimates of potential seabird by-catch associated with IUU longline fishing in the Convention Area in 2003 (paragraphs 5.20, 5.22 and 5.23);

(vi) levels of seabird and marine mammal by-catch in fisheries other than longline fisheries in the Convention Area in 2003 (paragraphs 5.40 to 5.42 and 5.45);

(vii) requests to Members for assistance with avoiding by-catch of seals in krill trawl fisheries (paragraphs 5.40, 5.43 and 5.44);

(viii) advice concerning reviewing issues relating to the use of bottom trawl gear (paragraphs 5.50 to 5.52).

5.57 The Commission was requested to endorse:

(i) recommendations of the strict implementation of mitigating measures, trials of such measures and exchange of fishers, in relation to longline fisheries in the French EEZs in Subarea 58.6 and Division 58.5.1 (paragraphs 5.7 to 5.10);

(ii) support for a key experiment concerning line weighting mitigation measures for autoline longline fishing in the Convention Area (paragraphs 5.16 and 5.37);

(iii) renewed attempts to acquire data from Members involved in longline fishery operations in areas adjacent to the Convention Area (paragraph 5.24);

(iv) the need for continued submission by Members of data on seabird population sizes, foraging ranges and provenance of by-catch (paragraph 5.25);

(v) support for forthcoming international initiatives, especially IFF3 and ACAP (paragraph 5.27);

(vi) continuing attempts to obtain progress reports on the development and implementation of FAO NPOAs from Members;

(vii) definitions of the nature and status of birds caught, relevant to limits to seabird by-catch (paragraph 5.39).

Specific Advice

5.58 The Commission was requested to provide advice, and consider taking action, as appropriate, in respect of:

(i) suggested revisions to Conservation Measure 25-02 (paragraphs 5.17 to 5.19);

(ii) suggested revisions to Conservation Measure 25-03 (paragraph 5.46(ii));

(iii) potential need for revisions to Conservation Measure 24-02 (paragraph 5.38);

(iv) taking even more stringent measures to combat IUU fishing in the Convention Area in order to protect populations of seabirds at serious risk (paragraph 5.21);

(v) continuing steps to request RFMOs, with competences in areas adjacent to the Convention Area, to take action in respect of mitigation of seabird by-catch (paragraph 5.28 and 5.33);

(vi) advice in relation to proposals for new and exploratory longline fisheries in the Convention Area in 2003 (paragraphs 5.34 to 5.36).

ADDITIONAL MONITORING AND MANAGEMENT ISSUES

Marine Debris

6.1 As requested by the Scientific Committee last year (SC-CAMLR-XXI, paragraph 6.8) the Secretariat prepared a paper on the current status of national surveys on monitoring of marine debris and their impact on marine mammals and seabirds in the Convention Area (SC-CAMLR-XXII/BG/25).

6.2 The CCAMLR marine debris database contains data from 11 sites, all within Area 48. Of these, three sites have data for at least three years that have been collected according to the CCAMLR standard methods. Members, locations and durations are as follows:

(i) beached marine debris: Chile (Cape Shirreff, Livingston Island, South Shetland Island 1993 to 1997) and UK (Bird Island, South Georgia 1989 to present, and Signy Island South Orkney Islands 1991 to present);

(ii) debris associated with seabird colonies: UK (Bird Island 1993 to present);

(iii) marine mammal entanglement: UK (Bird Island 1991 to present and Signy Island 1997 to present);

(iv) hydrocarbon soiling: UK (Bird Island 1993 to present).

6.3 A summary of the trends presented in SC-CAMLR-XXII/BG/25 indicated that:

(i) marine debris, principally packaging items and fishing gear, reached a peak in the period 1994–1996 at Bird Island and Signy Island and has declined thereafter;

(ii) the level of marine debris found in seabird colonies at Bird Island has increased particularly since 1998, with fishing gear such as lines and hooks forming the major part of the debris;

(iii) marine mammal (Antarctic fur seal) entanglement at Bird Island reached a peak in 1993 and showed a decline until 2000, since when there has been a slight increase with packaging bands, synthetic string and longline being the main entanglement material;

(iv) the number of seabirds contaminated with hydrocarbons remains low.

6.4 The Scientific Committee thanked the Secretariat for its report and recognised that it provided a significant improvement in the presentation of information on the status and trends of marine debris. Members were encouraged to work with the Secretariat during the intersessional period in order to improve presentation and develop standardised procedures for the analysis of marine debris data.

Surveys of Marine Debris on Beaches

6.5 Standardised surveys of marine debris were reported from King George Island, South Shetland Islands (SC-CAMLR-XXII/BG/20), Signy Island, South Orkney Islands (SC-CAMLR-XXII/BG/12) and Bird Island, South Georgia (SC-CAMLR-XXII/BG/10). Fisheries-related debris, including plastic packaging bands, were the dominant debris type in all areas.

Entanglement of Marine Mammals in Marine Debris

6.6 Standardised reporting of the entanglement of Antarctic fur seals in marine debris was reported from Signy Island, South Orkney Islands (SC-CAMLR-XXII/BG/13), where a single entangled animal was recorded between 24 October 2002 and 1 April 2003, and Bird Island, South Georgia (SC-CAMLR-XXII/BG/11) where 25 entangled seals were recorded between 1 April 2002 and 31 March 2003, a reduction of 50 % from the previous year. Nylon braid and plastic packaging bands were the most frequently recorded entangling material.

Marine Debris associated with Seabird Colonies

6.7 Marine debris associated with seabirds at Bird Island, South Georgia from 1 April 2002 to 31 March 2003 was reported in (SC-CAMLR-XXII/BG/9). There were 72 items of fishing gear, 58 of which were longlining hooks and line, which was a reduction from the previous year but still higher than the levels recorded between 1993 and 1998.

Seabirds and Marine Mammals Soiled with Hydrocarbons

6.8 Eleven cases of contamination with oil of wandering, black-browed and grey-headed albatrosses were recorded at Bird Island, South Georgia between 1 April 2002 and 31 March 2003 (SC-CAMLR-XXII/BG/9). In all cases, no more than about 1–2% of the birds' plumage was oiled, and breeding success was apparently not affected.

Submission of Data on Marine Debris

6.9 Dr Fanta reported that the Brazilian Antarctic Program had removed marine debris at Admiralty Bay, King George Island, South Shetland Islands, over the past 20 years. However, there were still difficulties in submitting this data in the CCAMLR standard format.

6.10 Prof. Torres reported that the Chile continued to collect marine debris at Cape Shirreff, Livingston Island, South Shetland Islands, in collaboration with the USA but that these data had not been submitted to the Secretariat in the CCAMLR standard format. Prof. Torres suggested that the continued high incidents of marine debris, particularly plastic packaging bands, may well be indicative of IUU fishing in the region and the Convention Area generally.

6.11 Dr Naganobu reported that, as in the previous years, no fishing gear had been lost from Japanese krill trawlers and that all damaged nets had been disposed of in the incinerators installed on board all of those vessels.

6.12 Dr H. Nion (Uruguay) reported that in addition to the data on marine debris reported in (SC-CAMLR-XXII/BG/20), there were no incidents of the entanglement of marine mammals in marine debris, no marine debris associated with seabird colonies or seabirds and marine mammals soiled with hydrocarbons at King George Island, South Shetland Islands.

6.13 Consul D. Chmiel (Poland) reported that during the Polish krill fishing operations no fishing gear had been lost and no marine debris sighted. In accordance with Conservation Measure 25-01, the plastic packaging bands were cut and incinerated on board.

6.14 The Scientific Committee noted that very few Members provided information on marine debris on the CCAMLR standard reporting forms and requested that Members submit such data in order to facilitate the consideration of the status and trends in marine debris by the Scientific Committee (SC-CAMLR-XXI, paragraph 6.23).

6.15 Prof. Torres informed the Scientific Committee that from 20 to 22 August 2003 the Chilean Ministry of Public Health organised the seminar 'VIDA CHILE' in Punta Arenas with the theme 'For a longer and more plentiful life in Magallanes', where a paper entitled 'The marine debris problem in Antarctica' was presented. Arising from this, INACH and Universidad de Magallanes propose to develop a research and education plan to address issues of marine debris in the Magallanes region following the protocols developed by CCAMLR.

6.16 The Scientific Committee welcomed this report of the positive contribution made by CCAMLR to the monitoring of marine debris in regions outside the Convention Area and especially in a location with a number of direct links, both through logistic and fishery operations, to the Antarctic.

Marine Mammal and Bird Populations

6.17 The Scientific Committee noted new data on population status and trends for albatross and petrels species (Annex 5, paragraphs 6.138 to 6.165) including the latest revision of the global conservation status of some species, as reported in the latest (2003) edition of the IUCN/BirdLife International Red List for Birds (WG-FSA-03/101). Although most new data were from populations outside the Convention Area, it was still of considerable concern that four species of albatross (black-browed albatross, Indian and Atlantic yellow-nosed albatrosses and sooty albatross), of relevance to the Convention Area, now meet international criteria for increased global risk of extinction.

6.18 Dr Constable also noted the long-standing desire to assess demographic data in relation to population trends. He suggested that this might be incorporated into the next quinquennial review of the status and trends of marine mammal and bird populations.

6.19 The Scientific Committee recommended that planning for this review should commence at the WG-EMM and WG-IMAF meetings next year. The working groups were requested to develop terms of reference for this review, and to consider the groups and individuals whose expertise and involvement would be most appropriate and valuable. They should prepare proposals for discussion at the Scientific Committee meeting next year.

6.20 The Scientific Committee noted that 14 papers on the status and trends in marine mammal and bird populations in the Southwest Indian Ocean had been considered by WG-EMM (SC-CAMLR-XXII/BG/3, paragraphs 4.60 to 4.69). Several species of seabirds, including sooty and yellow-nosed albatrosses and gentoo, rockhopper and macaroni penguins showed a long-term decline in the population size that were attributed to fishery-induced mortality, avian disease and reduced reproductive performance. In contrast, the populations of king penguin and Antarctic fur seals, both of which fed predominantly on myctophid fish, had undergone considerable increases at a range of sites.

6.21 The Scientific Committee agreed that information from the Southern Indian Ocean had emphasised the importance for some seabirds of incidental mortality associated with fisheries, periodic reductions in food availability associated with changing climatic regimes in the Southern Ocean and the potential utility of comparing the responses of predators to changes in food availability in krill- and non-krill-centred ecosystems.

MANAGEMENT UNDER CONDITIONS OF UNCERTAINTY ABOUT STOCK SIZE AND SUSTAINABLE YIELD

WG-FSA

7.1 The Scientific Committee took note of the fishery plans which had been updated by the Secretariat. It noted the fishery-related research needs and emphasised the need for necessary changes to the data collection and research plans in order to meet the requirements under Conservation Measure 21-02 (Annex 5, paragraphs 5.299 and 5.300).

7.2 The Scientific Committee noted the desire of SCIC to develop a comprehensive assessment of compliance (CAC) of fishing vessels with conservation measures. It welcomed this initiative to establish a more transparent process of assessment of data obtained from fisheries in as consistent, accurate and verifiable a manner as possible. This should result in a more rigorous assessment of compliance with relevant conservation measures than is currently feasible. An important source of such data is from scientific observers, both through logbooks and observer reports. It was emphasised that these tasks should not compromise observers other tasks nor their status and role on the vessel.

7.3 The Scientific Committee observed that CCAMLR-XXII/52 proposed one potential method and approach for such comprehensive compliance assessments. It noted that this proposal had been reviewed by WG-FSA (Annex 5, paragraphs 5.302 to 5.306) and WG-IMAF (Annex 5, paragraphs 6.58 to 6.65). It endorsed the main comments from these groups, specifically: