

## DEPENDENT SPECIES

### Species Monitored under the CCAMLR Ecosystem Monitoring Program

4.1 Dr Hewitt began the presentation of the WG-EMM report (Annex 4) by noting that the Working Group had reviewed the summary report on CEMP indices (WG-EMM-01/05). The Working Group concluded that the year 2000/01 had been average with respect to CEMP indices over the last 20 years. There were no indications of important differences in the indices among subareas within Area 48.

4.2 The Scientific Committee reviewed WG-EMM's discussions regarding the interpretation of CEMP indices and their usefulness in addressing management issues.

4.3 CEMP was established in 1985 to:

- (i) detect and record significant changes in critical components of the ecosystem to serve as a basis for the conservation of Antarctic marine living resources; and
- (ii) distinguish between changes due to the harvesting of commercial species and changes due to environmental variability, both physical and biological.

4.4 WG-EMM agreed to consider whether:

- (i) the nature and use of the existing CEMP data continued to be appropriate for addressing the original objectives;
- (ii) these objectives remain appropriate and/or sufficient; and
- (iii) additional data were available which should be incorporated into CEMP or be used in conjunction with CEMP data.

4.5 WG-EMM recognised that there would be a need, as part of the overall review of CEMP, to develop and link appropriate statistical and ecological models. This would require the involvement of specialists with relevant experience.

4.6 WG-EMM agreed to hold a preliminary session at its 2002 meeting to develop and link the models, address the terms of reference, and make detailed plans for a workshop to be held in conjunction with the 2003 meeting.

4.7 The Working Group agreed that a correspondence group convened by Prof. Croxall should be established to act as a steering committee both for the pre-workshop session in 2002 and to initiate planning for the workshop in 2003.

4.8 Dr Hewitt reported discussion of CEMP standard methods, by noting the potential for misinterpretation arising from the use of the growth rate of Antarctic fur seals following Standard Method C2.6, and by noting the proposal for a new index to replace the existing formulation (Annex 4, paragraphs 3.91 and 3.92).

4.9 It was noted that there are no CEMP standard methods relating to indices of prey abundance. It was agreed the sampling protocols and data analysis for the CCAMLR-2000 Survey should be considered as the CEMP standard method for collection of acoustic data.

4.10 The Scientific Committee agreed that the Subgroup on Methods, convened by Mr K. Reid (UK), should:

- (i) consider new, and revisions to existing, CEMP standard methods;
- (ii) advise on and review new techniques for the analysis of parameters; and
- (iii) develop criteria to evaluate the methods used in the collection of non-CEMP parameters identified by WG-EMM as relevant to its work.

4.11 Dr Hewitt reported discussion on the request by the Commission to the Scientific Committee (CCAMLR-XIX, paragraphs 11.20 and 11.21) to develop scientific advice regarding protected area proposals for marine areas from the ATCPs, on steps to be taken to determine:

- (i) whether a site proposed for designation as a marine protected area affects actual or potential harvesting of marine resources in relation to Article II of the Convention; and
- (ii) whether the draft management plan for the proposed site might prevent or restrict CCAMLR-related activities.

4.12 Dr Hewitt reported that WG-EMM noted that not all proposals will require the same information. The future assessment of the two questions from the Commission should include an assessment of available information relevant to CCAMLR and its objectives, such as location of breeding sites of seals and seabirds, location of foraging areas of seabirds and seals, description of known marine fauna, description of current or potential fisheries, location and details of research directly relevant to CEMP, as well as any other matters which may be relevant to the implementation of Article II of the Convention. WG-EMM would value having the Commission identify any additional questions it has regarding a specific proposal (Annex 4, paragraphs 4.30 and 4.31).

4.13 Dr E. Fanta (Brazil) noted that the Commission had previously endorsed the Scientific Committee recommendation of items which should be considered during such assessments (SC-CAMLR-XIX, paragraphs 11.21 and 11.22; CCAMLR-XIX, paragraph 11.17).

4.14 The Scientific Committee noted that further development of the general procedure should await a specific proposal. It was requested that the Commission consider whether any further work is required on this matter and whether the values of a proposal need to be assessed with respect to the two issues identified by the Commission (CCAMLR-XIX, paragraph 11.20).

4.15 A request for clarification arose concerning the current status of the Italian proposal for an ASPA at Terra Nova Bay, following recommendations for improvement provided by the 2000 meeting of WG-EMM (SC-CAMLR-XIX, Annex 4, paragraph 5.37).

4.16 At the time of adoption of the report, Italy informed the Scientific Committee that a research program has been initiated to obtain additional background data for the establishment of an ASPA at Terra Nova Bay. Previous work has provided a map of the distribution of benthic communities. Research in the 2001 summer season will produce a bottom morphology map.

4.17 A draft management plan for establishing the Terra Nova Bay ASPA will be prepared and forwarded in time for review by the appropriate working group(s) of the Scientific Committee in 2002.

4.18 The Scientific Committee requested the Commission to confirm whether it would be appropriate for proposals submitted to CCAMLR by ATCPs to be considered by the Scientific Committee and its working groups independently of any review process under way within SCAR.

4.19 The Scientific Committee noted that the Commission requested that it provide advice on the application of the provisions in Article IX.2(g) of the Convention, 'the designation of the opening and closing of areas, regions or subregions for purposes of scientific study or conservation, including special areas for protection and scientific study' (CCAMLR-XIX, paragraph 11.21).

4.20 In response to this request, the Scientific Committee noted the global interest in the use of marine protected areas (WG-EMM-01/31) and that a major review would be published in the journal *Ecological Applications* later in 2001. The Scientific Committee noted that consideration of Article IX.2(g) could be included in discussions of management options for fisheries. It also noted that such consideration would require the development of a framework for assessing the value of different management options in terms of achieving the objectives of the Convention.

4.21 The discussion by the Scientific Committee on the procedures to be followed in the review of draft management plans forwarded to CCAMLR for comment indicated a lack of clarity in the process. In particular, some Members felt that the values identified as the rationale for protection identified in a particular plan should be assessed by CCAMLR and others disagreed. Some Members raised questions regarding the pathway and timeline for review. The Scientific Committee expressed concern that the lack of clarity in the review process could result in proposals being given a less than timely and appropriate review.

#### Advice to the Commission

4.22 The Scientific Committee requested clarification from the Commission on several specific issues involved in the review of draft management plans for ASPAs or ASMAs under the Protocol of Environmental Protection to the Antarctic Treaty, that contain a marine component, forwarded to CCAMLR for comment:

- (i) Should the Scientific Committee review the values of protection identified in an Antarctic Treaty management plan or limit its comments to issues related to items in paragraph 4.11 above?
- (ii) What is the pathway of submission and referral to the Scientific Committee and its working group(s) for review of proposals received for comment by CCAMLR?
- (iii) Should the Scientific Committee review proceed independently of any review process under way within SCAR?

- (iv) What is the timeline for CCAMLR review of an ATCM management plan?

4.23 In addition, the Scientific Committee recommended that CCAMLR advise the ATCM of the time that will be required for review of draft management plans, taking into account the annual schedule of CCAMLR working groups, the Scientific Committee and the Commission to ensure a timely review.

#### Assessment of Incidental Mortality

##### Incidental Mortality in Longline Fisheries

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

##### Research into the Status of Seabirds at Risk

4.25 The Scientific Committee encouraged Members to complete the submission of data requested for the review of:

- (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; and
- (iii) genetic research relevant to determining the origin of birds killed in longline fisheries (Annex 5, paragraphs 7.3, 7.14, 7.21 and 7.23).

4.26 Prof. Moreno regretted that a report from Chile had not been submitted in time for the WG-IMALF meeting; he had passed a copy to the Convener for the Working Group to consider next year.

4.27 The Scientific Committee noted that important results from data so far submitted include:

- (i) a 25% decline in the population of black-browed albatrosses at the Falkland/Malvinas Islands, 18% in the last five years, is likely to result in the global conservation status of this species being changed from Near-threatened to Vulnerable (Annex 5, paragraph 7.13);
- (ii) substantial recent (1990s) declines (of 8–15%) in populations of wandering and grey-headed albatrosses, northern and southern giant petrels and white-chinned petrels at Marion Island (Subarea 58.6) reversing or halting previous recoveries. The main causes are believed to be increased mortality in the recently increasing tuna longline fisheries in areas adjacent to the Convention Area and the recent large-scale IUU fisheries for toothfish closer to the breeding site (Annex 5, paragraphs 7.15 and 7.16);

- (iii) substantial (28%) declines of white-chinned petrel populations at South Georgia since the mid-1980s, attributed to similar causes to the above (Annex 5, paragraph 7.17);
- (iv) the suggestion that mortality of adult female wandering albatrosses from Marion Island in temperate Southern Hemisphere tuna longline fisheries is the single most important factor compromising the conservation status of this population (Annex 5, paragraph 7.22);
- (v) potential problems in using genetic data to ascribe origins of grey-headed albatrosses to any particular island population and of black-browed albatrosses beyond distinguishing specimens from the Falkland/Malvinas Islands and Campbell Island from other breeding sites (Annex 5, paragraph 7.23); and
- (vi) declines in wandering albatross populations at Crozet and South Georgia and the recovery since 1986 of the Crozet population, both correlate with data on tuna longline fishing effort in adjacent regions of the Convention Area. The continuing decline of the South Georgia population is attributed to some combination of by-catch associated with longline fishing for tuna in the poorly documented South Atlantic and for toothfish both inside and outside the Convention Area. Attempts to correlate seabird population changes with fishing effort are likely to be limited by the quality of the latter data (Annex 5, paragraphs 7.27 to 7.31).

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

4.28 The Scientific Committee commended the prompt submission by observers of good quality data, which ensured comprehensive analysis of the data for 2001 (Annex 5, Tables 51 to 55). It noted that the main results were:

- (i) for Subarea 48.3 the total estimated seabird by-catch was only 30 birds, at a rate of 0.0014 birds/thousand hooks (Annex 5, paragraphs 7.38 and 7.39), very similar to last year's values; fishing season restrictions and continued improved compliance with Conservation Measure 29/XIX have kept by-catch in the regulated fishery in this subarea to negligible levels for the second successive year (Annex 5, paragraph 7.55);
- (ii) for fishing within the South African EEZ in Subareas 58.6 and 58.7, the total estimated seabird by-catch was 199 birds (a 61% reduction over last year), at a rate of 0.018 birds/thousand hooks (compared with 0.022 birds/thousand hooks last year) (Annex 5, paragraphs 7.40 and 7.41). Reduced by-catch this year was mainly due to changes in fishing area (Annex 5, paragraph 7.45), but improved compliance with Conservation Measure 29/XIX also contributed (Annex 5, paragraph 7.56); and

- (iii) no incidental mortality of seabirds was observed in Subarea 88.1 for the fourth successive year due to strict compliance with conservation measures (Annex 5, paragraph 7.53).

4.29 The Scientific Committee noted and commended that, in respect of seabird by-catch, the operation of the main regulated longline fisheries in 2000/01 had maintained the high standard of last year in Subarea 48.3 and had shown considerable improvement in the South African EEZ in Subareas 58.6 and 58.7.

4.30 The Scientific Committee endorsed the recommendation of WG-IMALF that fishing within 200 n miles of the Prince Edward Islands be prohibited in the months of September to April inclusive. However, if South Africa still considered it necessary to maintain a regulated fishing presence within its EEZ around the Prince Edward Islands in order to deter IUU fishing, then regulated fishing within 200 n miles of the islands should be prohibited at least from January to April (Annex 5, paragraphs 7.49 to 7.52).

4.31 In response to a question from Dr K. Sullivan (New Zealand), Mr Watkins reported that observers had indicated that birds caught and released alive (see Annex 5, paragraph 7.44) had been only lightly hooked and were in good condition when released.

4.32 The Scientific Committee noted that, as requested last year (SC-CAMLR-XIX, paragraph 4.21), data on seabird by-catch associated with longline fishing within the French EEZs in Subarea 58.6 and Division 58.5.1 in the 1999 and 2000 seasons had been submitted. This indicated that:

- (i) overall by-catch rates for the Crozet Islands (Subarea 58.6) were 0.736 birds/thousand hooks for 1998/99 and 0.184 birds/thousand hooks for 1999/2000, and for the Kerguelen Islands (Division 58.5.1) 2.937 birds/thousand hooks for 1998/99 and 0.304 birds/thousand hooks for 1999/2000 (Annex 5, paragraph 7.59); and
- (ii) a total of 8 491 white-chinned petrels (99% of all birds) was reported killed in the two years (Annex 5, paragraph 7.60). The totals of birds killed in the French EEZs in 1999 and 2000 were 17.2 and 4.2 times greater, respectively, than the total estimated seabird by-catches for the rest of the Convention Area; some monthly seabird by-catch rates exceed those used by WG-IMALF to estimate by-catch in the IUU fishery (Annex 5, paragraphs 7.62 and 7.63).

4.33 The Scientific Committee also noted the Working Group's recommendation that longline fishing within the French EEZs should be prohibited during the months of September to April inclusive (Annex 5, paragraph 7.64) and the request for the submission to CCAMLR of the original data for 1999 and 2000, in a form comparable to those reported for all other parts of the Convention Area, together with similar data from 2001, including information on mitigation measures in use in all three years (Annex 5, paragraph 7.65).

4.34 Prof. Duhamel regretted he had been unable to attend the meeting of WG-IMALF to provide fuller explanation concerning the data from the French EEZs. He confirmed that the numbers were entirely accurate, that CCAMLR conservation measures are in use in these EEZs, and that French scientists had been actively addressing the problems of seabird by-catch posed by fishing in summer (which was essential if IUU fishing in this region is to

be deterred) around the Crozet and Kerguelen Islands. He noted that the mitigating measures in use on French vessels were very successful in avoiding by-catch of albatrosses, but that Kerguelen in particular has a very large population of white-chinned petrels (second only to South Georgia), so the problem is particularly acute there and all methods tried to date (including laser multi-beam techniques and pressurised waterjets) to reduce incidental mortality of white-chinned petrels at night to acceptable levels have failed. Further work on mitigation measures was in progress. Prof. Duhamel also noted that the proposal above (paragraph 4.33), prohibiting fishing from September to April, could encourage IUU fishing and consequently increase bird mortality. In addition, the sea conditions in winter in these areas, known for the largest waves (from satellite altimetry records of sea levels), create a potential problem for the safety of fishing crews.

4.35 Prof. Croxall also noted that, in respect of Subarea 48.3, the UK shared France's concern for the safety of fishing vessels and crews in winter. This was an important element in its desire to see longline vessels fishing in this area enabled to use seabird by-catch mitigating measures that would allow them to fish at other times of year.

4.36 On behalf of WG-IMALF, Prof. Croxall noted that the French data indicated a peak in by-catch of white-chinned petrels between January and April and indicated that as with the recommendations with respect to the South African EEZ in Subarea 58.6, a prohibition on fishing during this period might represent an appropriate compromise between deterring IUU fishing and reducing by-catch of white-chinned petrels.

#### Compliance with Conservation Measure 29/XIX

4.37 The Scientific Committee noted that, overall, compliance with this conservation measure this year, compared to last year, was substantially improved in all subareas and divisions and was again complete in Subarea 88.1 (Annex 5, Table 56). It noted that the situation in respect of the different elements of Conservation Measure 29/XIX was as follows:

- (i) Streamer lines – compliance with streamer line design was 66%, double that last year. Vessels which have not complied with this element of the conservation measure over at least the last two years include *Argos Helena*, *Eldfisk*, *Isla Santa Clara*, *No. 1 Moresko* and *Aquatic Pioneer* (Annex 5, Tables 54 and 58 and paragraphs 7.67 to 7.69). Several vessels new to the fishery (*Polarpesca I*, *Suidor One* and *Rustava*) failed to comply with this simple and important measure (Annex 5, Table 58).
- (ii) Offal discharge – in the whole Convention Area only the *Maria Tamara* (Subarea 48.3) failed to comply with the requirement either to hold offal on board, or to discharge on the opposite side to where the line was hauled; in Subareas 58.6, 58.7 and 88.1 there was again 100% compliance in this regard (Annex 5, Table 59 and paragraph 7.71). Although Conservation Measure 29/XIX requests vessels in Subareas 48.3, 58.6 and 58.7 to avoid the discharge of offal during the haul, on 86% of cruises there was discharge during hauls on an average of 91% of sets (Annex 5, paragraph 7.72) In Subarea 88.1 no vessels discharged offal at any time, as required under Conservation

Measure 210/XIX, indicating that offal processing or retention is feasible for at least some vessels.

- (iii) Night setting – compliance improved in Subarea 48.3 from 87% last season to 95% and was maintained at 78% in Subareas 58.6 and 58.7.
- (iv) Line weighting (Spanish system) – unlike all previous years when no vessel complied with the use of weights of 6 kg spaced at 20 m intervals, with the change in Conservation Measure 29/XIX to require weights of 8.5 kg spaced at 40 m intervals, this requirement was met on 21% of cruises in Subarea 48.3 and 18% of cruises in Subareas 58.6 and 58.7. Eight other vessels used line weightings that were close to compliance. Uruguay reported that the *Isla Alegranza* had complied with the 0.3 m/s line sink rate required in Subarea 88.1 (Annex 5, paragraphs 7.77 to 7.80 and Figure 35).
- (v) Line weighting (autoline system) – the requirement to achieve a line sink rate of 0.3 m/s when fishing in daylight in Subarea 88.1 south of 65°S was met by all vessels (Annex 5, paragraph 7.81).

4.38 Prof. Moreno reported that in-port inspection in Chile of the *Maria Tamara*, prior to permitting her entry into the fishery, had confirmed that she was configured so as to discharge offal on the opposite side to the haul (see Annex 5, paragraph 7.71). Subsequent review of the report of the international scientific observer from Uruguay had confirmed that this stated that the vessel did discharge offal on the opposite side to the haul. Therefore only the logbook entry was at variance. It was agreed to correct this record and to indicate that the *Maria Tamara* had complied with this element of Conservation Measure 29/XIX.

4.39 The Scientific Committee noted that four (*Isla Gorriti*, *Janas*, *San Aotea II* and *Sonrisa*) of the 24 vessels longline fishing in the Convention Area complied fully with all elements of the conservation measures that were applicable in the areas they fished (Annex 5, Table 59 and paragraph 7.84), but that some vessels (*Isla Camila*, *Isla Santa Clara*, *Koryo Maru 11*, *No. 1 Moresko*, *Argos Helena*, *Aquatic Pioneer* and *Isla Alegranza*) have not complied with two or more of the elements of Conservation Measure 29/XIX for two or more consecutive years, and some vessels (*Polarpesca I*, *Suidor One*, *Maria Tamara*, *In Sung 66* and *Rutsava*) in their first year in the fishery had failed to comply with two or more measures (Annex 5, paragraph 7.89).

4.40 Overall, the Scientific Committee welcomed the substantial improvements in compliance with Conservation Measure 29/XIX achieved this year and noted the advice that all practical constraints relating to conforming with Conservation Measure 29/XIX in respect of night setting, offal discharge, streamer line use and line weighting have essentially been overcome (Annex 5, paragraph 7.86).

4.41 The Scientific Committee recollected its advice to the Commission last year (SC-CAMLR-XIX, paragraph 4.41(i)) that vessels unable or failing to comply with the offal discharge, night setting and streamer line elements of Conservation Measure 29/XIX should be prohibited from fishing in the Convention Area. In view of the progress with line weighting for Spanish-system vessels, it now recommended that vessels which do not comply with all elements of Conservation Measure 29/XIX should be prohibited from fishing in the CCAMLR Convention Area (Annex 5, paragraphs 7.87 and 7.88).



4.42 Several Members commended the efforts made by Members, technical coordinators, fishing companies and fishers to improve compliance with Conservation Measure 29/XIX, while regretting that it had taken so long to reach a situation where full compliance was a realistic prospect.

4.43 Prof. Moreno, while agreeing with this, expressed concern that recommending exclusion of vessels from fishing in the Convention Area, based on persistent failure to comply with Conservation Measure 29/XIX, could result in such vessels fishing in waters outside the Convention Area where risk of seabird by-catch was high and where the use of mitigating measures, such as those in Conservation Measure 29/XIX, was not a requirement.

4.44 The Scientific Committee recognised this as a potential problem, for which a large part of the solution was stricter requirements, in respect of the use of mitigating measures, governing longline fishing in areas adjacent to the Convention Area, including appropriate EEZs (paragraph 4.73). It was also noted that most, if not all, vessels engaged in longline fishing in the Convention Area had substantially improved their performance with respect to the use of mitigating measures over the last two years. It was hoped that technical coordinators and scientific observers would continue to work with fishing companies and fishers to ensure further improvements, many of which would also help to reduce seabird by-catch and improve fishing performance when used outside the Convention Area.

4.45 In response to a question from Prof. Duhamel, Prof. Croxall indicated it was noted that the incorporation into Conservation Measure 29/XIX of specific requirements for line sink rates on autoline vessels was expected to be proposed next year, following completion of experimental research by New Zealand (Annex 5, paragraphs 7.182 and 7.231).

4.46 Dr Fanta summarised the requirements imposed by Brazil on vessels seeking to conduct longline fishing in the Convention Area (CCAMLR-XX/BG/22), indicating that these not only required full compliance with Conservation Measure 29/XIX (including as a condition of re-licensing for fishing in the Convention Area), but specified the use of an on-board offal processing plant and recommended the use of underwater setting.

4.47 The Scientific Committee commended Brazil's initiatives as exemplary in this regard.

#### Fishing Seasons

4.48 The Scientific Committee noted that, on the basis of the data for the 2000/01 fishing season in Subarea 48.3, seabird by-catch levels were negligible, for the second successive season. However, full compliance with Conservation Measure 29/XIX was not achieved so it was not possible to recommend an extension to the fishing season for 2001/02 in Subarea 48.3 (Annex 5, paragraphs 7.91 and 7.92). It also noted the advice that full compliance could be achieved next year with relatively small improvements to operational practice (Annex 5, paragraph 7.93).

4.49 It was noted that if, in the future, the Commission accepts advice from the Scientific Committee for an extension of the longline fishing season for *Dissostichus*, it would need carefully to consider how to proceed if subsequently there was failure to comply with Conservation Measure 29/XIX or more than negligible levels of seabird by-catch.

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

4.50 The Scientific Committee noted that:

- (i) As in past years, estimates of potential seabird by-catch have been made using two alternative catch rates; the average catch rate for all cruises in the regulated fishery (lower level) and the highest catch rate for any cruise in the regulated fishery for that period (higher level). The estimates for 2001 (Annex 5, paragraphs 7.109 to 7.113, Tables 60 and 61) were:

Subarea 48.3:	1 600–2 100 to 5 900–7 700 seabirds;
Subareas 58.6 and 58.7:	12 100–16 000 to 22 000–29 000 seabirds;
Divisions 58.5.1 and 58.5.2:	13 500–17 800 to 24 600–32 400 seabirds; and
Division 58.4.4:	9 300–12 500 to 17 100–22 700 seabirds.

- (ii) The overall estimated totals for the whole Convention Area (Annex 5, paragraph 7.114 and Table 61) indicate a potential seabird by-catch in the unregulated fishery of 36 000–69 000 (lower level) to 48 000–90 000 birds (higher level) in 2000/01. This compares with totals of 17 000–27 000 (lower level) to 66 000–107 000 (higher level) in 1996/97, 43 000–54 000 (lower level) to 76 000–101 000 (higher level) in 1997/98, 21 000–29 000 (lower level) to 44 000–59 000 (higher level) in 1998/99, and 33 000–63 000 (lower level) to 43 000–83 000 (higher level) in 1999/2000.
- (iii) The species composition of the estimated potential seabird by-catch (Annex 5, Table 62) indicates a potential by-catch of 40 500–89 500 albatrosses, 7 000–15 000 giant petrels and 109 000–275 000 white-chinned petrels in the IUU fishery in the Convention Area over the last five years (Annex 5, paragraph 7.120).

4.51 Prof. J. Beddington (UK) enquired whether the estimates of seabird by-catch included those potentially related to the IUU catches of toothfish reported from Area 51.

4.52 Prof. Croxall replied that this was not the case. He indicated that if these IUU catches of toothfish had originated from the Convention Area, as now seems likely (paragraphs 2.12 and 2.13), and the seabird by-catch rates from the adjacent Convention subareas (58.6 and 58.7) were applied, then the additional estimated potential incidental mortality of seabirds would have been about 25 000–60 000 individuals.

4.53 The Scientific Committee endorsed its conclusions of recent years that the levels of mortality reported in paragraph 4.50 remain entirely unsustainable for the populations of albatrosses, giant petrels and white-chinned petrels breeding in the Convention Area (Annex 5, paragraph 7.122), many of which are declining at rates where extinction is possible. It recommended that the Commission take even more stringent measures to combat IUU fishing in the Convention Area (Annex 5, paragraph 7.123).

Incidental Mortality of Seabirds in relation  
to New and Exploratory Fisheries

4.54 The Scientific Committee noted that:

- (i) of the seven exploratory longline fisheries approved for 2000/01, only that in Subarea 88.1 was operational; no seabird by-catch was reported in this fishery (Annex 5, paragraphs 7.129 and 7.130);
- (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-XX/BG/11. There had been no changes to this advice in relation to levels of risk of seabird by-catch for any part of the Convention Area (Annex 5, paragraph 7.128);
- (iii) the 24 proposals by eight Members for new and exploratory longline fisheries in 14 subareas/divisions of the Convention Area in 2001/02 were addressed, in relation to advice in SC-CAMLR-XX/BG/11 and Annex 5, Table 63;
- (iv) the potential problems which needed resolving (Annex 5, paragraphs 7.133 to 7.137) were:
  - (a) to check that France intends to comply with Conservation Measure 29/XIX, rather than Conservation Measure 29/XVI as indicated, for Subarea 58.6 and Divisions 58.4.3 and 58.4.4. France indicated that this was an error in the text submitted, and confirmed that it firmly intended to comply with Conservation Measure 29/XIX;
  - (b) whether or not Japan intends to comply with Conservation Measure 29/XIX and to use an international scientific observer in Subareas 48.6, 58.6, 88.1 and 88.2, and Divisions 58.4.1, 58.4.3 and 58.4.4. Japan drew attention to CCAMLR-XX/10 Addendum which indicated its intention of complying with both of the above measures;
  - (c) clarification of fishing season in respect of South Africa's applications for Subarea 58.6 and Division 58.4.4; and
  - (d) applications for variations from Conservation Measure 29/XIX (e.g. similar to Conservation Measure 210/XIX) for Subareas 48.6, 88.1, 88.2 and Division 58.4.4.

4.55 The Scientific Committee endorsed recommendations for:

- (i) the continuation of Conservation Measure 210/XIX for exploratory fishing in Subarea 88.1 (Annex 5, paragraph 7.136) and an extension of this measure to the area north of 65°S in Subarea 88.1;
- (ii) the development of similar conservation measures for exploratory fishing in Subareas 48.6 and 88.2 and Division 58.4.4, retaining a strict precautionary limit on seabird by-catch (Annex 5, paragraphs 7.137 to 7.139); and

- (iii) the adoption of an additional simpler method for testing line sink rates (Annex 5, paragraph 7.140 and Appendix G).

#### Incidental Mortality of Seabirds during Longline Fishing outside the Convention Area

4.56 The Scientific Committee noted the information:

- (i) from South Africa that Japanese and Taiwanese vessels longline fishing for tuna in the South African mainland EEZ are estimated to kill annually 19 000–30 000 seabirds, including black-browed albatrosses and white-chinned petrels from the Convention Area. By-catch rates on Japanese vessels were 2.64 birds/thousand hooks; failure to use required mitigation measures, including streamer lines, was reported (Annex 5, paragraphs 7.143 to 7.146);
- (ii) from New Zealand and Falkland/Malvinas Islands on low levels of seabird by-catch observed in longline fisheries (Annex 5, paragraphs 7.148 and 7.149); and
- (iii) from Australia, indicating a 48% increase in tuna longline fishing effort in the AFZ in 1999 but, without observers, the lack of reliable by-catch data for this fishery (Annex 5, paragraph 7.150).

4.57 Japan noted that estimating the total seabird by-catch, simply by multiplying the by-catch rate by the number of hooks may be misleading, since the value may be dependent on the characteristics of the area and the vessels. Therefore, Japan would like to address this problem in relevant fora in the future.

4.58 The Scientific Committee welcomed the response by Japan and encouraged Members to provide relevant advice and, where possible, to assist Japan to implement and monitor the success of mitigating measures, similar to those successfully used in the Convention Area, to minimise seabird by-catch.

4.59 The Scientific Committee endorsed the recommendation that responses be sought by the Secretariat on seabird by-catch levels, mitigation measures in use (and whether voluntary or mandatory) and observer programs from all Members and other countries conducting or permitting longline fishing in areas where seabirds from the CCAMLR Convention Area are killed (Annex 5, paragraph 7.158).

#### Research into and Experience with Mitigating Measures

4.60 The Scientific Committee noted and endorsed, as appropriate, the advice concerning mitigating measures, and indicated its support for incorporating appropriate advice into Conservation Measure 29/XIX, when this is next revised. Specifically it noted:

- (i) offal discharge – scupper screens should be used to prevent discharge of offal and bait from vessels while processing catch (Annex 5, paragraph 7.161).

Hooks, increasingly abundant in regurgitates from albatross chicks, should be removed from fish heads prior to discard (Annex 5, paragraph 7.162);

- (ii) streamer lines – a video of the successful New Zealand boom and bridle system should be circulated to fishers via technical coordinators (Annex 5, paragraph 7.163); paired lines have proved superior to single lines when tested in Alaskan demersal longline fisheries and should be tested in the Convention Area (Annex 5, paragraph 7.164);
- (iii) bait – further trials (Annex 5, paragraphs 7.165 to 7.168) are recommended and more data requested on circumstances of bait loss (Annex 5, paragraph 7.169);
- (iv) underwater setting – *Eldfisk* continues to use the Mustad funnel with success on day sets in the Convention Area and the same device performed well in Alaskan trials (Annex 5, paragraph 7.170); full trials of the Australian chute system are in progress on 10 vessels, earlier trials giving a 96% reduction in baits taken (Annex 5, paragraph 7.171);
- (v) line weighting –
  - (a) several vessels fishing in the Convention Area last year were able to comply with the revised line weighting system of 8.5 kg at 40 m intervals (Annex 5, paragraphs 7.75 to 7.78 and 7.173); when complying, only one of seven cruises recorded seabird by-catch, whereas six of 15 cruises recorded seabird by-catch when not complying (Annex 5, paragraph 7.174);
  - (b) all autoliners (and one Spanish system vessel) fishing in Subarea 88.1 achieved line sink rates of 0.3 m/s. The predictive model of sink rate was further developed (Annex 5, paragraphs 7.173 and 7.182);
  - (c) a new simple means of measuring line sink rate should enable predictive sink rate models to be developed for the Spanish longline system (Annex 5, paragraphs 7.176 and 7.183); and
  - (d) trials in New Zealand of a Norwegian-manufactured sample integrated autoline weighting system will take place shortly (Annex 5, paragraphs 7.179 and 7.180). It was noted that if trials were successful and such a system becomes commercially available, this would greatly simplify compliance with Conservation Measures 29/XIX and 210/XIX.

4.61 The Scientific Committee requested Members to support further research and development on the above topics, together with reports to the next meeting of WG-IMALF.

4.62 In response to the Scientific Committee's request last year, a proposal has been developed for rigorous experiments on the effects of the different elements of Conservation Measure 29/XIX, when applied to the Spanish longline system, in reducing seabird mortality (Annex 5, paragraphs 7.186 to 7.188).

4.63 The Scientific Committee noted the importance of the proposed study in terms of its potential to improve and simplify Conservation Measure 29/XIX. The research would also

make a contribution to advice on appropriate mitigating measures for use by vessels employing the Spanish system of longlining in other parts of the world, especially in areas where birds from the Convention Area are currently being killed in large numbers. It recommended that Members able to help in carrying out the study, whether in terms of financial, logistic or other assistance, should accord this high priority.

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

4.64 The Scientific Committee endorsed advice in respect of:

- (i) the International Fishers' Forum – Members were encouraged to disseminate information on this successful meeting by way of articles in fishery magazines and journals (Annex 5, paragraphs 7.191 to 7.194); and
- (ii) the Agreement on the Conservation of Albatrosses and Petrels (ACAP) – CCAMLR Members who are range states (including distant-water fishing nations that interact with Southern Hemisphere albatrosses and petrels on the high seas) were encouraged to sign and ratify the agreement as soon as possible (Annex 5, paragraphs 7.195 to 7.198).

4.65 The Scientific Committee expressed concern at the lack of progress by CCAMLR Members towards implementation of FAO NPOA–Seabirds (requested by the Commission for February 2001), with the exception of Japan, New Zealand and the USA, who had either adopted or developed plans, and Australia, whose Threat Abatement Plan serves in lieu for the time being. The other relevant CCAMLR Members were urged to produce, adopt and implement plans as soon as possible (Annex 5, paragraphs 7.195 to 7.206). It noted that the Japanese plan was regarded as inadequate, in respect of mitigation measures, to reduce seabird by-catch to acceptably low levels, specifically in areas frequented by seabirds from the Convention Area (Annex 5, paragraph 7.212). It also noted that further details on the status and content of the plan and on details of mitigation measures relating to all Japanese longline fisheries relevant to Convention Area seabirds were requested (Annex 5, paragraph 7.213).

4.66 Japan shares the view that bird by-catch should be minimised. The important point is how to minimise the by-catch. Japan is now making a great effort to achieve this objective. For example, Japan has introduced a mandatory measure for tuna longliners to use tori (streamer) lines while targeting southern bluefin tuna. If there is further constructive advice, Japan would certainly welcome it and pay due consideration to improve mitigation (see paragraph 4.57).

4.67 Dr Fanta stated that Brazil's NPOA–Seabirds is to be sent to FAO shortly (SC-CAMLR-XX/BG/28). She indicated that as part of contribution towards the implementation of its NPOA–Seabirds, Brazil had already established collaborative research between fisheries and conservation scientists and fishing companies, masters and crews to test by-catch mitigating measures and to establish a project for the training of fishers and scientific observers in relation to their use (SC-CAMLR-XX/BG/28).

4.68 Dr Marschoff reported that studies reviewing seabird by-catch in Argentine waters would be submitted to WG-IMALF next year. He indicated that of five longline vessels currently fishing in these waters, three were using the Mustad underwater setting funnel.

4.69 In respect of the BirdLife International Regional Workshop held in Uruguay in September 2001, Dr Fanta introduced a summary (SC-CAMLR-XX/BG/27) of the new South American Strategy for the Conservation of Albatrosses and Petrels (ESCAPE).

4.70 Prof. Moreno, who had been present at the workshop which was attended by representatives of fishing conservation and research interests from Argentina, Brazil, Chile, Ecuador, Falklands/Malvinas, Peru and Uruguay, in addition to BirdLife International staff from South Africa, Spain and the UK, gave details of many aspects of this meeting. He described it as perhaps the most significant development of its kind to have occurred in South America. He indicated that several papers describing the results of by-catch studies and assessments had been contributed, especially by scientists from Argentina, Brazil and Uruguay, and that a workshop volume publishing these was envisaged.

4.71 The Scientific Committee commended these initiatives and requested that relevant Members ensure that copies of their publications are submitted to WG-IMALF to assist its work next year.

4.72 The ASOC Observer stated that ASOC has grave concerns about the high levels of seabird by-catch and mortality. ASOC thanked WG-IMALF for its very comprehensive, but disturbing, report to CCAMLR. During the session of the Scientific Committee meeting, it had been heartening to hear from delegates of some of the very useful initiatives under way to understand and deal with these issues. ASOC requested, as a matter of urgency, that CCAMLR Members, many of whom have been present through the development of FAO IPOAs and ACAP, turn their efforts into developing and implementing NPOAs and ratifying ACAP which requires only four more ratifications for it to enter into force.

4.73 In concluding the presentation of the report of WG-IMALF, Prof. Croxall noted that, given the considerable success in reducing seabird incidental mortality in most regulated longline fisheries in the Convention Area to low, even negligible levels, the greatest threats confronting the conservation at sea of albatrosses and petrels breeding in the Convention Area are the levels of mortality likely to be associated with IUU fishing for toothfish in the Convention Area, and with longline fishing for other species in areas adjacent to the Convention Area. Although the Commission is according high priority to combatting IUU fishing in the Convention Area, from the point of view of mortality of seabirds breeding in the Convention Area, by-catch in fishing operations outside the Convention Area is likely to be just as significant. It is encouraging to note progress in developing mitigation measures to address this problem by Members with EEZs in areas adjacent to the Convention Area; however there is an urgent need for collaborative work with appropriate regional fisheries organisations to ensure that effective mitigating measures are used throughout longline fisheries within the areas of their jurisdiction.

4.74 The Scientific Committee endorsed these views and requested Members to give every assistance possible to developing appropriate collaboration and data exchange with the relevant tuna commissions and other regional fisheries organisations (Annex 5, paragraphs 7.214 to 7.217).

4.75 The Scientific Committee thanked WG-IMALF and all associated with it for its work throughout the intersessional period and during its meeting.

#### Incidental Mortality of Marine Mammals in Longline Fisheries

4.76 The Scientific Committee noted that only one (unidentified) marine mammal was reported killed by a longline vessel in the Convention Area in 2001 (Annex 5, paragraph 8.1).

#### Incidental Mortality in Trawl Fisheries

4.77 The Scientific Committee noted that:

- (i) one Antarctic fur seal was reported killed by a trawl vessel in Division 58.5.2 (Annex 5, paragraph 8.4);
- (ii) no instances of incidental mortality of seabirds were reported from trawl fisheries in Divisions 58.4.2 and 58.5.2 in 2000/01 (Annex 5, paragraph 8.4); and
- (iii) in trawl fishing for icefish in Subarea 48.3, 132 seabirds were entangled, at least 92 fatally. This represents a total of three times the estimated total seabird by-catch mortality for all regulated longline fishing in the subarea in 2001 (Annex 5, paragraphs 8.5, 8.6 and 8.18).

4.78 The Scientific Committee noted that one of the vessels responsible, the *Betanzos*, was the same vessel responsible for all seabird trawl mortality (19 black-browed albatrosses) in Subarea 48.3 last year and recollected the concern regarding this vessel expressed in last year's report (SC-CAMLR-XIX, paragraph 4.49).

4.79 It noted, however, the advice of WG-IMALF that insufficient data were available to determine the precise cause of the high levels of seabird by-catch associated with certain vessels fishing for icefish in Subarea 48.3 and the consequent difficulty in proposing appropriate remedies, e.g. in the form of a binding conservation measure (Annex 5, paragraphs 8.19 and 8.20).

4.80 Accordingly, the Scientific Committee endorsed the recommendation that:

- (i) new data recording and reporting arrangements be devised for scientific observers on trawl vessels fishing in Subarea 48.3 commencing in the 2001/02 season, in order to determine the nature of offal discharge and deck lighting (see Conservation Measure 173/XVIII) and other details relevant to incidental entanglement and mortality of seabirds (Annex 5, paragraph 8.20);
- (ii) mitigation measures, similar to those in use in New Zealand domestic trawl fisheries, be tested on vessels trawl fishing for icefish in Subarea 48.3 in 2001/02 (Annex 5, paragraph 8.21); and



- (iii) seabird by-catch limits be placed on each vessel trawl fishing for icefish in Subarea 48.3 in 2001/02 (Annex 5, paragraph 8.22).

4.81 It also recommended that the Secretariat should seek to acquire recent data on seabird by-catch for French trawl fisheries in Division 58.5.1 and in any other relevant parts of the Convention Area (Annex 5, paragraph 8.23).

4.82 In regard to paragraph 4.81, Prof. Duhamel noted that there had been no seabird mortality associated with experimental trawl fishing for icefish and commercial longline fishing around Kerguelen (Division 58.5.1) between 1998 and 2000 and only a single bird killed in 2001. Mr Williams recollected the consistently very low or zero levels of seabird by-catch in the same fishery in Division 58.5.2 in recent years.

4.83 The Scientific Committee discussed further the advice of WG-IMALF that, until appropriate mitigating measures can be recommended, vessels participating in the trawl fishery for icefish in Subarea 48.3 be subject to an interim precautionary limit on the number of seabirds killed. If this limit is reached, fishing by the vessel responsible would cease. This would provide a strong incentive for vessels to develop effective mitigation measures to avoid being excluded from this fishery.

4.84 Prof. Beddington noted that despite the low absolute numbers of seabirds killed in this trawl fishery this year (92), in relation to the tens of thousands of birds potentially killed annually in IUU fishing for toothfish, and the numbers killed in regulated fisheries for toothfish operating during summer in analogous areas (e.g. 516 and 2 241 birds killed in the South African and French EEZs respectively in Subareas 58.6 and 58.7 in 2000), it was nevertheless important to take this issue seriously and to seek to identify an appropriate limit on seabird by-catch, which would encourage prompt changes in fishing practice.

4.85 Several Members emphasised the practical problems of implementing a vessel-specific by-catch limit, not least the difficulties of ensuring regular reporting from each vessel to CCAMLR. Concern was also expressed over the role of the scientific observers, who, although explicitly not involved in this reporting, would nevertheless be recording, and eventually reporting on, seabird by-catch as part of their normal duties (*Scientific Observers Manual*, Section 1, Annex 1).

4.86 It was noted that the procedures for ensuring compliance with the seabird by-catch limit set for vessels participating in the exploratory longline fishery for toothfish in Subarea 88.1 were not explicit in Conservation Measure 210/XIX and it was recommended that the Commission consider carefully how to achieve compliance with any seabird by-catch limit set for the trawl fishery for icefish in Subarea 48.3.

4.87 Dr K. Shust (Russia) suggested that it was unreasonable to penalise vessels that had consistently operated with zero or negligible levels of reported seabird by-catch in the trawl fishery for icefish in Subarea 48.3.

4.88 Prof. Moreno indicated that while the problems with the *Betanzos* may reflect aspects of its gear configuration or use, they did not relate to the acoustic cable linking the paravane to the net.

4.89 In response to a question from Dr Hewitt, Prof. Croxall indicated that the proposal to abolish the closed season for this fishery (currently 1 March to 31 May) would have a very limited effect on potential seabird by-catch levels and almost certainly none at all after mid-April, when black-browed albatrosses and white-chinned petrels migrate out of the area.

4.90 While a closure of the fishery during critical periods, as specified for the longline fishery in SC-CAMLR-XX/BG/11, would be effective in reducing these levels, the Scientific Committee noted that the problem seems to be confined to the performance of individual vessels rather than a fishery-wide problem. To that end, the Scientific Committee indicated that a closure would be premature at this stage pending research through the coming season and an evaluation of the problem at next year's meetings of WG-IMALF and WG-FSA.

4.91 In this context, it was suggested that approaches to addressing the by-catch of seabirds in trawl fisheries might be similar to the approaches taken for longline fisheries. It was noted that WG-IMALF considered the catch of 30 birds in the most recent longline fishing season in Subarea 48.3 (Annex 5, paragraph 7.39) to be sufficiently negligible in that fishery (Annex 5, paragraph 7.226) to warrant extending the fishing season, pending full compliance with Conservation Measure 29/XIX. In that regard, an interim catch rate at a similar level for the trawl fishery may be appropriate for one year, pending the review described above.

4.92 However, other Members noted that the mortality levels of 20 to 30 birds in 2000 and 2001 in longline fisheries in Subarea 48.3 were the product of by-catch rates of 0.002 birds/thousand hooks in both years. These rates are an order of magnitude lower than in any other regulated longline fishery in the Convention Area where the risk of seabird by-catch is comparable and are the result of several years of research and management in respect of mitigation measures now of proven efficacy, especially in relation to fishing in winter, when the risk of seabird by-catch is already low.

4.93 Thus, while a by-catch limit of 30 birds for trawl fishing in the whole of Subarea 48.3 may be a highly desirable aim, given that the problem with vessels in this trawl fishery was only discovered in 2000 and the first mitigating measures will only be tested in 2001, some Members felt it was unrealistic to set such a limit for next year.

4.94 Although the Scientific Committee could not offer advice based on scientific data or analysis, it agreed that a catch limit per vessel of 20 birds should not restrict most of the fishing fleet, but could suffice as an appropriate interim measure this year for protecting seabirds, while maintaining by-catch rates at levels not dissimilar from the longline fishery in the area and requiring improvements in fishing practice.

#### Incidental Mortality in Other Fisheries

4.95 The Scientific Committee noted that no instances of incidental mortality of marine mammals or seabirds had been recorded for the exploratory squid fishery or the *D. eleginoides* pot fishery in Subarea 48.3 (Annex 5, paragraph 8.24).

4.96 The Scientific Committee thanked WG-IMALF for its work on this topic. It requested the Working Group to continue to address these issues and recommended that its title be changed to the Working Group on Incidental Mortality Associated with Fishing (WG-IMAF).

## Marine Debris

4.97 The Scientific Committee recollected its review last year of all aspects of data submitted by Members to CCAMLR under this agenda item (CCAMLR-XIX, paragraphs 4.51 to 4.59).

4.98 In respect of each of the six topics listed in SC-CAMLR-XIX, paragraph 4.56, the Secretariat had been requested to:

- (i) review all data submitted to CCAMLR;
- (ii) review and/or develop as necessary forms (and associated instructions or guidelines) for standardised reporting of data to CCAMLR;
- (iii) summarise status and trends for such topics as is feasible with available data;
- (iv) compile a list of papers submitted by Members on marine debris-related matters since 1983. (This was subsequently made available on the CCAMLR website.); and
- (v) prepare a consolidated report for the current meeting.

4.99 The Scientific Committee thanked the Secretariat for its report (SC-CAMLR-XX/BG/22). It considered how best to proceed towards its target of having:

- (i) all relevant data collected in standard fashion;
- (ii) all such data submitted to CCAMLR on standard recording forms;
- (iii) where desirable and feasible, these data incorporated into the CCAMLR database; and
- (iv) an annual report on status and trends relating to all the main aspects of marine debris-related observations provided to the Scientific Committee.

4.100 In response to the request from the Commission (CCAMLR-XIX, paragraph 6.7) the Scientific Committee recommended discontinuing the current system of reporting on collection of marine debris by vessels at sea. Few reports had been received and all were essentially anecdotal. The Scientific Committee would prefer to receive data from standardised quantitative surveys from vessels of debris at sea and encouraged any Members engaged in such activities to report on this and their methods to the Secretariat.

4.101 In respect of the other topics, the Scientific Committee recommended that:

- (i) the current versions of instructions for collecting data should be adopted, subject to any amendments notified to the Secretariat before the end of the Commission meeting;
- (ii) the current versions of the standard recording/reporting forms for these data should be adopted, subject to any amendments notified to the Secretariat before the end of the Commission meeting;

- (iii) the CCAMLR Secretariat should only accept data on these topics which are submitted on the standard reporting forms and which have been collected according to the prescribed standard methods;
- (iv) the submission of Members' Reports on Assessment and Avoidance of Incidental Mortality should now be discontinued; and
- (v) data provided by Members on:
  - (a) surveys of marine debris on beaches;
  - (b) entanglement of mammals in marine debris; and
  - (c) marine debris associated with seabird colonies;

should be incorporated into the CCAMLR database once appropriate consultation and validation with relevant Members had been undertaken (paragraph 4.102), for sites where at least five years of data exist. Other submitted data would be archived in appropriate electronic formats.

4.102 In addition, the Scientific Committee recommended that for data already submitted to the CCAMLR database (e.g. on surveys of marine debris on beaches), the Secretariat should correspond intersessionally with appropriate Members to validate in detail their submitted data and to encourage submission of any additional current, recent or historical data, where such data have been collected by a method consistent with the approved standard method and where data will be submitted on the standard reporting forms.

4.103 The Scientific Committee requested the Secretariat to prepare a report, as indicated in paragraph 4.99(iv) for its consideration each year.

4.104 Members are still encouraged to provide reports to the Scientific Committee on their own data, where these contain information that would amplify and assist the interpretation of trends and/or when they are reporting on data not yet submitted in part or in full to the CCAMLR database.

4.105 Any issues relating to the procedures involved in submission or validation of data should be discussed intersessionally with the Secretariat by Members.

4.106 The Scientific Committee noted the report on CCAMLR work on monitoring marine debris and its impact on marine living resources in Antarctic waters, prepared by the Secretariat as requested by the Scientific Committee (SC-CAMLR-XIX, paragraph 4.73) and submitted to CEP last year (SC-CAMLR-XX/BG/16). It thanked the Secretariat for this excellent review.

4.107 The CCAMLR Observer to CEP (Dr Holt as Chair of the Scientific Committee) noted that this report was very favourably received by CEP and was clearly the current benchmark for such studies in Antarctic sites and waters.

4.108 The Scientific Committee encouraged continuing collaboration with CEP on this topic, though it was noted that there would be some limitations associated with the different geographical areas covered by CEP and CCAMLR.

4.109 The Scientific Committee then considered reports on marine debris-related topics submitted by Members this year, together with related comments.

#### Surveys of Marine Debris on Beaches

4.110 Mr Lozano reported that Uruguay (SC-CAMLR-XX/BG/21) had undertaken surveys, using the CCAMLR standard method, of beaches near Artigas Station, King George Island (Subarea 48.1). The debris recorded came from a wide variety of sources potentially including tourists, scientific activities, logistic activities and fishing.

4.111 Prof. D. Torres (Chile) reported that Chile (SC-CAMLR-XX/BG/25), acknowledging assistance from the USA, had conducted the eighth annual survey at Cape Shirreff (Subarea 48.1) during the austral summer of 2000/01. A total of 1 774 articles (98% plastics) included 589 plastic bands (34% of all plastics). Of these, 40 were uncut and another 48 had been knotted into a loop, both in contravention of Conservation Measure 63/XV (and Annex IV of the Madrid Protocol). Several articles were totally or partially oiled; some plastic articles were partially burnt. The overall level of debris was an increase compared with the values of the last four years.

4.112 Prof. Croxall reported on UK surveys. At Bird Island, South Georgia (Subarea 48.3), (SC-CAMLR-XX/BG/2) the 10th consecutive annual survey revealed 408 items, a 92% increase over last year (and a three-fold increase in winter levels), reverting to levels of two to three years ago. Most items clearly originated from fishing vessels. At Signy Island, South Orkney Islands (Subarea 48.2) (SC-CAMLR-XX/BG/5), the 11th consecutive annual survey produced only 16 items, the lowest total ever recorded, with only one packaging band, continuing a declining trend since 1993/94.

4.113 Dr Fanta reported that although Brazil had collected marine debris at Admiralty Bay, King George Island (Subarea 48.1) as reported in its Member's Activities for 2000/01, the material had been disposed of before it could be analysed; most debris was of local origin and unrelated to fishing vessels.

4.114 Mr Watkins reported that South Africa had not undertaken any beached debris surveys in 2001 (SC-CAMLR-XX/BG/13).

4.115 Dr Holt reported that the USA had included data from surveys at Palmer Station (Subarea 48.1) within its report on Members' Activities for 2000/01; it would endeavour to submit these and previous data from this site to CCAMLR as soon as possible.

#### Entanglement of Marine Mammals in Marine Debris

4.116 Prof. Croxall reported on the UK surveys. At Bird Island, South Georgia (Subarea 48.3) (SC-CAMLR-XX/BG/3), the number of entanglements had increased, with 20 in winter (three times 1999 values) and 22 in summer (a 51% increase over last year). In both seasons, plastic packaging bands accounted for the majority of entanglements, the incidence having increased to levels comparable with those before the CCAMLR ban on their use on fishing vessels. At Signy Island (Subarea 48.2) (SC-CAMLR-XX/BG/4), for the first time in the five years of surveys, no seal entanglement was reported.

## Marine Debris associated with Seabird Colonies

4.117 Prof. Croxall reported on the eighth year of standard surveys at Bird Island, South Georgia (Subarea 48.3) (SC-CAMLR-XX/BG/7). An unprecedented quantity of monofilament longline and hooks (67 hooks in a total of 99 items) was recorded in association with wandering albatrosses, a 55% increase over last year. This suggests that the discarding by fishing vessels of gear and offal (e.g. toothfish heads) complete with hooks and line is occurring on a large scale. He noted that similar findings had been reported from Marion Island; the recommendation from WG-IMALF in respect of discarding hooks had been noted earlier (paragraph 4.60(i)).

4.118 Dr Marschoff stated that there was a report from the Argentine station on the South Orkney Islands of a giant petrel with a fishing hook embedded in its wing (Subarea 48.2).

## External Contamination of Animals

4.119 Two wandering albatrosses with red paint, apparently deliberately applied, were reported from Bird Island, South Georgia (Subarea 48.3); there were no reports of oil contamination of animals at this site (SC-CAMLR-XX/BG/27).

4.120 The reports by Chile on beached debris surveys (SC-CAMLR-XX/BG/25) included evidence of oil pollution in adjacent waters, albeit with no evidence that live animals were affected.

4.121 The Scientific Committee thanked Members for these reports, indicating considerable activity concerning marine debris-related topics. It noted that the overall trend this year was of increasing levels of debris and entanglement at most sites. It also noted reports of relatively high levels of plastic bands at many sites. It endorsed the comments made in several reports (SC-CAMLR-XX/BG/2, BG/3, BG/21, BG/25) that the Commission should enhance its efforts to require Members to improve their standards of disposal and treatment of debris, particularly in respect of plastic packaging bands.

## Trends in Marine Mammals and Bird Populations

4.122 In respect of bird populations, this topic was reviewed last year by the Scientific Committee following a detailed report from the SCAR Bird Biology Subcommittee (SC-CAMLR-XIX, paragraphs 4.79 to 4.89). A similar report on Antarctic fur seals by the SCAR Group of Specialists on Seals was reviewed by the Scientific Committee last year (SC-CAMLR-XIX, paragraphs 4.90 and 4.91).

4.123 The next scheduled full review of this topic would normally be three to five years after 2000 (SC-CAMLR-XIX, paragraph 4.78).

4.124 The Scientific Committee noted that the WG-EMM report (Annex 4) contained new information relating to status and trends of marine mammal and bird populations in the Convention Area, specifically:

- (i) changes in Adélie penguin populations at Ross Island (Subarea 88.1) relating to the extent of winter sea-ice (Annex 4, paragraph 3.41);
- (ii) declines in Adélie penguin breeding populations at King George Island (Subarea 48.1) concurrent with reductions in krill biomass estimates from the same area (Annex 4, paragraph 3.42);
- (iii) decreases in gentoo and macaroni penguin breeding populations at Bird Island, South Georgia (Subarea 48.3), related to potential changes in krill availability (Annex 4, paragraphs 3.72 and 3.73); and
- (iv) possible reduction in rates of increases of fur seal breeding populations at Cape Shirreff (Subarea 48.1) (Annex 4, paragraphs 3.47 and 3.50).

4.125 The report of WG-IMALF also contained recent information on the status and trends of seabird populations relevant to the Convention Area, viz:

- (i) major recent declines of black-browed albatrosses at the Falkland/Malvinas Islands which may result in the species being reclassified (by IUCN) as Vulnerable in respect of its global conservation status (Annex 5, paragraph 7.13). This has potential implications for CCAMLR with respect to Article II of the Convention;
- (ii) recent substantial declines in populations of wandering and grey-headed albatrosses, southern and northern giant petrels and white-chinned petrels at Marion Island (Subarea 58.6), halting or reversing population recoveries of the first four species (Annex 5, paragraph 7.15). These changes were attributed to increased incidental mortality as a result of changes in longline fishing effort for tuna outside the Convention Area and IUU fishing for *Dissostichus* spp.;
- (iii) a major decline in the white-chinned petrel population at Bird Island, South Georgia, between 1981 and 1998, attributed to high levels of incidental mortality in longline fisheries within and adjacent to the Convention Area (Annex 5, paragraph 7.17); and
- (iv) a request to Members for their latest data on the population status of albatrosses and petrels to enable WG-IMALF to complete a review at its next meeting.

4.126 Dr Goubanov stated that Ukraine intends to collect new data on the status of marine birds and seals in the area of Vernadsky Station (Argentine Islands Archipelago, Bellingshausen Sea (Subarea 48.1)) and to monitor changes in their populations.

4.127 Dr Constable outlined that the history of the agenda item has been to review from time to time the long-term trends in populations of seabirds and marine mammals not monitored in CEMP, but for which SCAR could provide information and reviews on their status and trends. Given that the time series of the status of some of these populations is now quite long, including the recent reports on populations on albatrosses and petrels contained within the report of WG-FSA (Annex 5), he suggested that WG-EMM might review how such information could be included in the assessment of the marine ecosystem as part of their program of work to be undertaken over the next few years.