REPORT OF THE WORKING GROUP ON INCIDENTAL MORTALITY ASSOCIATED WITH FISHING

(This text was adopted as part of the WG-FSA report and has been extracted here as a separate document)

INCIDENTAL MORTALITY OF MAMMALS AND SEABIRDS ARISING FROM FISHING

Intersessional Work of Ad Hoc WG-IMAF

6.1 The Secretariat reported on the intersessional activities of ad hoc WG-IMAF according to the agreed plan of intersessional activities for 2002/03 (SC-CAMLR-XXI, Annex 5, Appendix D). The report contained records of all activities planned and results of their completion and is available on the IMAF page of the CCAMLR website.

6.2 The Working Group thanked the Science Officer for his work on the coordination of IMAF activities and the technical coordinators for their extensive support. It also thanked the Scientific Observer Data Analyst for his work on the processing and analysis of data submitted to the Secretariat by international and national observers during the course of the 2002/03 fishing season.

6.3 The Working Group concluded that most tasks planned for 2002/03 had been successfully implemented. The list of current intersessional tasks was reviewed and a number of changes were agreed in order to consolidate specific tasks in future plans. The Working Group agreed that the plan of intersessional activities for 2003/04, compiled by the Convener and Science Officer, be appended to its report (Appendix E).

6.4 The membership of ad hoc WG-IMAF was reviewed. The Working Group noted with regret that Ms T. Hewitt (Australia) had resigned from the group due to her changed commitments. The Working Group especially welcomed Dr Agnew, Mr J. Arata (Chile), Drs Double, Melvin, T. Micol (France), Sullivan and Waugh who attended the meeting for the first time. The Working Group continued to appreciate Mr M. McNeill's (New Zealand) expert advice on operational aspects of fishing and encouraged analogous input from other Members. Members were asked to review their representation on WG-IMAF intersessionally, to suggest additional members and to facilitate the attendance of their representatives at the meetings.

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

6.5 Data were available from 37 longline cruises conducted within the Convention Area during the 2002/03 season (details in WG-FSA-03/63 Rev. 1).

6.6 The Working Group noted that the proportion of hooks observed was similar to last year for Subareas 48.3 (25% (range 17–63) compared with 22% (range 19–31)), 58.6 and 58.7 (45% (range 36–50) compared with 37% (range 9–59)) and 88.1 and 88.2 (52% (range 35–62) compared with 42% (range 40–45)), but with generally greater consistency across vessels. Only for four cruises (*Isla Alegranza* (17%), *Isla Santa Clara* (19%), *Ibsa Quinto* (19%) and *Shinsei Maru No. 3* (19%)) was the proportion of hooks observed lower than 20%.

6.7 As usual, the total observed seabird catch rate was calculated using the total number of hooks observed and the total seabird mortality observed (Table 6.1). The estimated total catch of seabirds by vessel was calculated using each vessel's observed catch rate multiplied by the total number of hooks set.

Subarea 48.3

6.8 The total estimated seabird mortality was eight birds (Tables 6.1 and 6.2) compared with 27 birds last year and 30 the year before (Table 6.3). The overall catch rate was 0.0003 birds/thousand hooks compared to 0.0015 for the previous year (Table 6.3). Of the two birds observed killed (both at night), one was a grey-headed albatross and one a Cape petrel (Table 6.4).

6.9 This is the lowest seabird mortality rate and total yet recorded in this subarea, a notable achievement, especially given the recent increase in fishing effort (from 17 to c. 25 million hooks over the last two years).

South African EEZs in Subareas 58.6 and 58.7

6.10 The total estimated seabird mortality was seven birds (Tables 6.2 and 6.3) compared with no bird mortalities last year (Table 6.3). The overall catch rate was 0.003 birds/thousand hooks compared to zero for the previous year (Table 6.3). Of the two birds observed killed (both at night), one was a white-chinned petrel and one a grey petrel (Table 6.4).

6.11 The maintenance of low levels of seabird by-catch rates and totals was encouraging, particularly compared to levels from 1997 to 2000, but it was observed that fishing effort has decreased markedly (from 6–8 million hooks in 1999–2001 to 1.3–1.6 million hooks in 2002 and 2003).

Subareas 88.1 and 88.2

6.12 No incidental mortality of seabirds was observed in fishing operations, despite a significant increase in fishing effort compared with previous years. This was the seventh successive year of zero seabird by-catch in the fishery in Subarea 88.1 and the second such year for Subarea 88.2.

Division 58.4.2

6.13 This was the first year that longline fishing had been conducted in Division 58.4.2. No incidental mortalities of seabirds were observed in fishing operations.

Division 58.5.2

6.14 This was the first year that longline fishing had been conducted in Division 58.5.2. No incidental mortalities of seabirds were observed in fishing operations.

6.15 Overall, the Working Group noted that in respect of data for regulated longline fishing reported to CCAMLR, the estimated total of 15 birds killed in 2003 is the lowest ever

recorded and negligible in respect of impact on the seabird populations concerned. Everyone involved in conducting and managing the fishing operations should be thanked for their efforts.

French EEZs in Subarea 58.6 and Division 58.5.1

6.16 Data received intersessionally for 1999/2000 and 2000/01 (SC-CAMLR-XXI, Annex 5, paragraph 6.15) were in the process of evaluation, but had not been submitted in CCAMLR forms and formats. Results for the 1999 and 2000 seasons, involving mortality of 8 491 white-chinned petrels, had been reported previously to CCAMLR (SC-CAMLR-XX, paragraph 4.32).

6.17 The Secretariat reported that no data had been received for the 2002/03 season, nor had data been received for the 2001/02 season.

6.18 The Working Group greatly regretted the continuing failure of France to provide data, including in appropriate forms and formats, despite repeated requests (e.g. SC-CAMLR-XX, paragraph 4.33) and despite assurances given last year (SC-CAMLR-XXI, paragraph 5.5; CCAMLR-XXI, paragraph 6.10).

6.19 Dr Micol reported that France continued to have problems with the by-catch of seabirds, chiefly white-chinned petrels, in the fisheries within its EEZs in the Convention Area. Between September 2001 and August 2002, 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. In the fishing year commencing September 2002, 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, a significantly lower rate than in the previous year. Mortality levels were highest in February, particularly during full moon.

6.20 Dr Micol reported that the French authorities were extremely concerned at this situation and are actively working in several areas to address the problem:

(i) Autoline vessels (currently six in this fishery) are only allowed to set at night, with minimum lighting, no offal discharge during setting, and line weights of 8 kg every 500 m generally and 8 kg every 250 m during the January–April chick-rearing period of white-chinned petrels; at least one streamer line is used.

(ii) Spanish system vessels (currently one in the fishery) must comply with the provisions of Conservation Measure 25-02, including prohibition of offal discharge during setting. By-catch rates are currently lower for the Spanish system vessel (0.275 birds/thousand hooks, based on 413 hooks observed) than for the autoline vessels (0.684 birds/thousand hooks, based on 12 595 hooks observed).

(iii) Seasonal closures are being considered, especially during October and February–March, when white-chinned petrels are at greatest risk; this year longline fishing around Kerguelen will be prohibited to all vessels for one month during the above periods.

(iv) The more drastic approach of closing the longline fishing grounds during the whole of the breeding season of white-chinned petrels (i.e. as in Subarea 48.3) had been considered. However this would have at least two undesirable effects. Firstly, fishing in winter would coincide with the breeding season of grey petrels (*Procellaria cinerea*), equally vulnerable to being killed on longlines but with much smaller populations than white-chinned petrels. Secondly, extensive restriction of the fishing season would compromise many of the activities in these areas designed to combat the high potential levels of IUU fishing, which potentially kills large numbers of seabirds.

(v) Observers are required on all longline fishing vessels. Reporting of seabird by-catch rates is required at daily intervals; vessels with high by-catch rates receive formal warnings and may be subject to a 100 n mile move-on requirement.

(vi) In addition, the catch limit for the current year is divided into two parts, with 20% being reserved for those vessels which have demonstrated the best performance, in terms of compliance with fishing regulations and with environmental practices (e.g. low seabird by-catch rates).

(vii) Research is under way to investigate gear and fishing practices which might help to reduce or solve the problem. These approaches include: use of integrated line weighting for autoliners; line colour (currently seabird by-catch rates are significantly higher on black, compared with white, lines); trials of pot fishing; use of artificial baits, ultrasonic and water cannon scaring devices.

(viii) Comprehensive analyses of the by-catch data in relation to time of year, environmental conditions etc. has been commissioned from Dr H. Weimerskirch's (France) research group.

6.21 The Working Group welcomed this report from Dr Micol. It noted that:

(i) the high seabird by-catch rates reflect the difficulties of achieving appropriate mitigation for longline fishing in areas surrounding major seabird breeding colonies (at Crozet and Kerguelen Islands) during their main breeding season;

(ii) the reported by-catch rates are likely to be conservative estimates due to the nature of the observer operation (single observer, daily bird totals derived from assembling the accumulated by-catch rather than from direct observation during setting);

(iii) the line weighting for autoliners will be inadequate to achieve appropriate sink rates, based on detailed experiments elsewhere in the Convention Area.

6.22 The Working Group noted its serious concern at the level of seabird by-catch reported for the French EEZs (25 841 birds killed between September 2001 and August 2003) and further noted that:

(i) the rates of seabird by-catch (0.635 and 0.456 birds/thousand hooks for 2001 and 2002 respectively) greatly exceed those for any other fishery within the Convention Area;

(ii) there is an apparent trend of substantial increases in fishing effort (from 19 million hooks to 30 million hooks over the last two years) in an area with known high levels of seabird by-catch;

(iii) the level of by-catch reported is likely to be unsustainable for the major populations being affected (white-chinned and grey petrels);

(iv) there are no recent published population estimates, nor monitoring studies, nor indication of population trends for either white-chinned petrels or grey petrels in the region;

(v) the high level of seabird by-catch associated with autoline fishing in the French EEZs in 2001 and 2002 might indicate that if the autoliners recently purchased by France are operating in this fishery, their design did not incorporate those features desirable for reducing seabird by-catch (see SC-CAMLR-XXI, Annex 5, paragraph 6.84). The Working Group repeated the request for further information from France in relation to the design and operation of the recently purchased longline fishing vessels.

6.23 The Working Group noted that the experience of the group and, in particular, those members with experience inside and outside the Convention Area (especially in the New Zealand region where white-chinned petrels are abundant) would be very relevant in helping French scientists and managers to address this very serious situation (see also SC-CAMLR-XXI, paragraph 5.6). The Working Group also noted that better knowledge of how the recent reductions in by-catch in the South African EEZs in Subareas 58.6 and 58.7 had been achieved would be very instructive.

6.24 The Working Group recommended that:

(i) by-catch data for the 2002 and 2003 seasons be submitted to the Secretariat as soon as possible, using CCAMLR data reporting forms and formats. These data would be analysed by the Scientific Observer Data Analyst in the usual way and made available on the IMAF section of the CCAMLR website for evaluation by the Working Group;

(ii) the results of the analyses by Dr Weimerskirch's research group be submitted to CCAMLR as soon as possible. This would be placed on the IMAF webpage for evaluation and discussion. The Working Group recollected the value of the analyses undertaken by South African scientists in investigating the influences of a variety of factors on seabird by-catch rates in Subareas 58.6 and 58.7 (WG-FSA-98/42, 99/42 Rev. 1 and 00/30);

(iii) an ad hoc subgroup be established to collaborate with French scientists, managers and fishers, in order to provide advice on the most practical and effective ways of addressing the seabird by-catch problems in the French EEZs.

6.25 The Working Group emphasised the potential benefits of the collaborative development of a program of testing and evaluation of existing and potential mitigation measures. An appropriate program would simultaneously reduce local by-catch rates and

provide urgently needed data to enable improved conservation measures to be developed for the Convention Area as a whole and with important implications for by-catch management in areas adjacent to the Convention Area.

Recommendations to Reduce Seabird By-catch in the French EEZs in Subarea 58.6 and Division 58.5.1 in 2003/04

6.26 In light of the high seabird mortality levels in the French EEZs in Subarea 58.6 and Division 58.5.1, Working Group members from New Zealand, Australia and France met to discuss the best ways of achieving the desired conservation outcomes. Three approaches were proposed: the immediate implementation of mitigation measures thought to be effective in reducing mortality; the joint preparation of a trial designed to demonstrate the effectiveness of certain measures as seabird deterrent; and fisher exchanges between France and New Zealand.

6.27 In addition to strict compliance with the requirements of Conservation Measure 25-02, it was considered that additional mitigation measures would be required in the French EEZs in Subarea 58.6 and Division 58.5.1 to reduce the very high levels of seabird mortality in these areas. The additional measures include specified line weighting for autoline vessels, deployment of two streamer lines (as indicated in the recommended revision to Conservation Measure 25-02), use of a bird-scaring gas cannon and modification to offal discharge practices.

Mitigation Measures

6.28 The line-weighting regime should ensure that longlines sink at ≥0.25 m/s which, in combination with a single streamer line, has been highly effective in reducing mortality of white-chinned petrels in New Zealand (WG-FSA-03/23). This sink rate can be achieved by compliance with the line sink rate requirements of Conservation Measure 24-02 (attachment to longlines of 5 kg weights at 50–60 m intervals) or use of longlines with 50 g/m of integrated weight (IW). It was stressed that line weights spaced at greater than 50–60 m intervals would not substantially increase sink rates. Of the two available line-weighting regimes, IW is preferred by fishers in New Zealand because of its constant sink profile, ease of handling and use, and the potential to enhance catch rates of fish (ling).

6.29 Paired streamer lines should be used on all line sets. Offal should be discharged only once each day, either when steaming on the fishing grounds or when line hauling. Given the need to reduce seabird mortality levels as a matter of urgency, the latter measure – which is different to the advice currently given in Conservation Measure 25-02 – is included as an attempt to minimise the number of seabirds following vessels during line hauling, which may result in fewer birds around vessels during line-setting operations. A single discrete dumping of offal each day may reduce the number of birds around vessels when line-setting operations commence. It was also recommended that vessels be equipped with a bird-scaring gas cannon (of the type used in vineyards) as an additional deterrent (the cannon deters birds from the area immediately behind the vessel, thus causing birds to dive on lines further behind vessels where longlines are deeper and more difficult to reach).

6.30 The Working Group endorsed these recommendations and urged the appropriate French authorities to implement them as a matter of priority.

Mitigation Trial

6.31 To reduce seabird mortality in the French EEZs in Subarea 58.6 and Division 58.5.1 it was proposed to conduct a mitigation trial in the 2003/04 season. The purpose of the trial in this area is to determine the effectiveness of methods shown to be effective in reducing seabird mortality in the New Zealand ling fishery. The trial would measure the effects of mitigation methods on both seabird by-catch and a target fish catch. The trial will contribute to the development of a collaborative relationship with industry in tackling the seabird by-catch problem and will produce information of relevance to the fisheries in question as well as to other fisheries in the Convention Area. The details of the trials would be developed by members of WG-IMAF as soon as possible intersessionally.

Fisher Exchange

6.32 The Working Group believed the most effective way to improve the experience of French longline fishers in practical and effective mitigation measures was for a New Zealand fisher to visit Reunion Island as soon as possible. At a later date it would be productive for French fishers to visit New Zealand and experience at first hand the operation of mitigation measures proven to be effective against white-chinned petrels.

6.33 Overall, the Working Group noted that while it strongly supported the immediate implementation of conservation measures as specified in paragraphs 6.27 and 6.28, it reiterated its earlier advice (SC-CAMLR-XX, paragraph 4.33) that the most effective measure to minimise seabird by-catch would be to restrict longline fishing to the months of May to August inclusive, outside the breeding season of white-chinned petrels.

Implementation of Conservation Measures 24-02 and 25-02

6.34 Data from observer reports relating to compliance with these conservation measures in 2002/03 were provided in WG-FSA-03/63 Rev. 1 and 03/65 Rev. 1 and are summarised in Tables 6.5 and 6.6 and Figure 6.1. Comparison with similar data from previous years is provided in Table 6.6.

Streamer Lines

6.35 Compliance with streamer line design and deployment has once again improved with observers reporting full compliance on 34 of 37 cruises (92%). This compares to 86% compliance last year. The three vessels that did not fully comply failed on attachment height (*Ibsa Quinto* and *Isla Alegranza*), length of streamer line and streamer length (*Lodeynoye*) and spacing of streamers (*Isla Alegranza*) (Table 6.5).

6.36 All vessels fishing in Subareas 58.6, 58.7, 88.1 and 88.2 and Division 58.5.2 used streamer lines on all sets. In Subarea 48.3, nine vessels undertook sets without using a streamer line. Of these, three vessels undertook more than five sets without streamer lines (*In Sung No. 66* – 8 sets (5%), *Isla Alegranza* – 45 sets (31 %) and *Shinsei Maru No. 3* – 24 sets (20%)) (Table 6.1 and WG-FSA-03/63 Rev. 1). In Division 58.4.2, the *Eldfisk* undertook nine sets (6%) without a streamer line.

Offal Discharge

6.37 Observer reports indicated compliance with the requirement to hold offal on board or to discharge on the opposite side to where the line was hauled on all vessels except the *South Princess* in Subareas 58.6 and 58.7 (Table 6.1). According to the logbook, this vessel discharged offal on the same side as hauling for 99% of its hauls. The cruise report also indicated that offal was discharged during 1.8% of sets. While fishing in Subareas 88.1 and 88.2, the *South Princess* discharged offal during one set.

6.38 In Subarea 48.3, four vessels were observed discharging offal during setting: both cruises of the *Argos Helena* (3% each cruise); the *Tierra del Fuego* (3%); and the *Isla Sofía* and *Jacqueline* both discarded offal on one occasion.

6.39 Issues relating to quantification and reduction of discards of hooks in offal are summarised in paragraphs 10.4 to 10.6.

Night Setting

6.40 Compliance with night setting has remained high this year in all subareas where this requirement applies. In Subareas 48.3, 58.6 and 58.7, 98% of sets occurred at night. Only one vessel (*Magallanes III* in Subarea 48.3) undertook a substantial number of day sets (37 sets, 18% according to logbook data). However, the report of the scientific observer indicated that all sets took place between dusk and dawn.

6.41 In Subareas 88.1, 88.2 and Division 58.4.2 vessels fished under Conservation Measure 24-02, which contained exemptions to night setting south of 60°S for vessels which demonstrated a consistent minimum line sink rate of 0.3 m/s (see paragraph 6.44).

Line Weighting – Spanish System

6.42 This is the third year that vessels using the Spanish longline system have operated with the alternative line-weighting regimes of either 8.5 kg weights spaced at no more than 40 m or 6 kg at no more than 20 m (Conservation Measure 25-02). This year there was 100% compliance with this measure in Subareas 48.3, which is a substantial improvement from last year when 66% of vessels complied. In earlier years (between 1997/98 and 1999/2000), when the conservation measure required 6 kg every 20 m, the highest compliance was 5%. In Subareas 88.1 and 88.2 there was full compliance with line weighting.

6.43 In Subareas 58.6 and 58.7 the *Koryo Maru No. 11* only used 6 kg every 40 m, thus failing to comply with the line-weighting regime in Conservation Measure 25-02.

Line Weighting – Autoline System

6.44 In Subareas 88.1, 88.2 and Division 58.4.2 vessels fishing south of 60°S in daylight were required to use line weights to achieve a consistent minimum line sink rate of 0.3 m/s (Conservation Measure 24-02). The Working Group noted that all vessels complied with this measure. The sink rates are provided in WG-FSA-03/65 Rev. 1, Table 5.

General

6.45 The Working Group noted that if compliance with Conservation Measure 25-02 is interpreted strictly (i.e. 100% in all elements of the conservation measure), 14 of the 29 vessels (48%) fully complied with all measures at all times throughout the Convention Area (Table 6.7). This compares with 3 of 21 vessels last year (14%). The Working Group noted that a group of vessels failed to fully comply by small margins (Table 6.7). The Working Group once again emphasised that the specifications in the conservation measure are minimum standards; it recommended that vessels should be advised to exceed these minimum standards to prevent compliance failure.

Fishing Season

6.46 In 2000 the Scientific Committee advised the Commission that once full compliance with Conservation Measure 29/XIX (now Conservation Measure 25-02) was achieved, together with negligible levels of seabird by-catch, any relaxation of closed seasons should proceed in a stepwise fashion and the results of this be carefully monitored and reported (SC-CAMLR-XIX, paragraph 4.42).

6.47 In 2002 WG-FSA considered three options for season extensions:

(i) An extension of the season for two weeks in September once there was full compliance with Conservation Measure 29/XIX (25-02), and subject to a limit of three birds per vessel, assuming fishing effort was maintained at current levels. Vessels would be required to carry two observers, so that the limit could be monitored accurately, and either two streamer lines or a single streamer line with a boom and bridle system would be required.

(ii) An extension of the season for the last two weeks in April once there was full compliance with Conservation Measure 29/XIX (25-02), and subject to a limit of three birds per vessel, assuming fishing effort was maintained at current levels. Vessels would be required to carry two observers, so that the limit could be monitored accurately, and either two streamer lines or a single streamer line with a boom and bridle system would be required.

(iii) In the forthcoming season to allow only vessels in Subarea 48.3 that were adjudged to have complied fully with Conservation Measure 29/XIX (25-02) in 2001/02 to fish during the last two weeks of April to enable a preliminary assessment of the seabird by-catch during this period. As part of the access arrangement during this period, the vessel would be required to collect data to allow a more reliable assessment of the risk to seabirds during this period. This would include collection of data on the sink rate of longlines, and observation of seabird behaviour around the vessel. A limit of three birds would be applied to the vessel; two observers would be required so that the limit could be monitored accurately; two streamer lines or a single streamer line with a boom and bridle system would be required.

6.48 In 2002 the Scientific Committee advised the Commission that option (i) – an extension of the fishing season for two weeks in September once there was full compliance with Conservation Measure 29/XIX (25-02) and subject to a limit of three birds per vessel – was the preferable option in light of the lower potential risk to seabirds.

6.49 In 2002 the Commission endorsed the conclusion of SCOI (CCAMLR-XXI, Annex 5, paragraph 3.22) that only one vessel was judged to have fully complied with Conservation Measure 29/XIX (25-02) in the longline fishery in Subarea 48.3 in 2002. The Commission agreed that trials to assess the feasibility of a step-by-step extension of the fishing season could commence during the last two weeks of April 2003 using this one vessel.

6.50 The vessel (*Argos Helena*) that fully complied with Conservation Measure 29/XIX (25-02) in Subarea 48.3 in 2002 took up the option of commencing fishing during the last two weeks of April 2003. The vessel commenced fishing on 15 April 2003. On 20 April 2003 it killed three seabirds (two white-chinned petrels and one black-browed albatross). Because of the three-seabird limit placed on the vessel, all fishing ceased until the regular fishing season commenced on 1 May 2003.

6.51 The cruise report stated that five seabirds were caught during the trip, and of these three were dead. It is unclear from the information provided whether all of these birds were caught during the season extension, and the observer interpreted the limit only to relate to dead birds, or whether the live birds were caught after 1 May 2003. This illustrates two points: firstly the importance of the Working Group's note last year (SC-CAMLR-XXI, Annex 5, paragraph 6.176) that it is necessary to define precisely what is meant by birds 'caught'; and secondly the need for observers to complete logbooks fully at all times.

6.52 On the basis of the experience of the *Argos Helena*, and new information from the French EEZ during the 2001 and 2002 seasons (see paragraphs 6.19 to 6.21), the Working Group reiterated its advice from last year that current mitigation measures are unlikely adequately to mitigate capture of white-chinned petrels during the summer season in high-risk areas.

6.53 In light of this, the Working Group felt unable to support consideration of the two options that include fishing in April (options (ii) and (iii)). Where a trial season extension is under consideration, the Working Group still recommended September as an option for any vessel that has achieved full compliance with Conservation Measure 25-02, and noted that this was endorsed as the preferred option by the Scientific Committee last year (SC-CAMLR-XXI, paragraph 11.7).

6.54 Should an extension of the season occur in September and any seabird limit imposed on vessels be reached, this may indicate that Conservation Measure 25-02 is not adequate to allow an extension of the fishing season. Equally, if vessels do not reach the seabird limit, a review of the mitigation measures would be necessary to determine whether they used more than the minimum standards specified in Conservation Measure 25-02. Under either scenario, the Scientific Committee may need to review its earlier advice to the Commission (SC-CAMLR-XIX, paragraph 4.42) that once compliance with this conservation measure is achieved, relaxation of closed seasons should be considered.

Compliance with Conservation Measure 25-03

Net Monitoring Cables

6.55 The Working Group noted that observers were reporting the presence of cables associated with side-mounted net monitoring devices on trawl vessels in the Convention Area (WG-FSA-03/65 Rev. 1), which could be interpreted as representing a contravention of Conservation Measure 25-03.

6.56 The Working Group believed that cables linked to side-mounted devices may pose no threat to seabirds. The Working Group recommended that observers be provided with illustrations that highlight the difference between cables linked to side-mounted net monitoring devices and trawl third-wire style net monitoring cables. As it is, third-wire style net monitoring cables that have been shown to kill seabirds, the Working Group recommended that observers be asked to report only on the latter with respect to Conservation Measure 25-03. However, reports of any seabird interactions with cables linked to side-mounted net monitoring devices should be included in the observer report.

Offal Discharge

6.57 Two trawl vessels fishing in Subarea 48.3 were observed discarding offal during net shooting and hauling, the *Sil* (5 shots and 5 hauls) and the *In Sung Ho* (5 shots).

Assessment of Compliance of Fishing Vessels with Conservation Measures

6.58 The Working Group considered CCAMLR-XXII/52 which suggested a potential approach, to be implemented by SCIC, towards developing a new system for undertaking assessment of compliance of fishing vessels with conservation measures.

6.59 The paper indicated some deficiencies of the current system, notably that it does not differentiate between minor and substantive infringements, and that compliance assessment is not comprehensive across all relevant conservation measures.

6.60 The paper proposed a method for ranking compliance of vessels based on combining assessments for all relevant conservation measures, so that each vessel is assigned a total compliance score.

6.61 Currently, WG-IMAF interprets the minimum acceptable standard for compliance with conservation measures to be 100%. The Working Group expressed concern that the proposed compliance score approach could result in a lowering of the acceptable standard of compliance. Acceptance of less than 100% compliance with measures would effectively provide a disincentive to fishers to make efforts to achieve the prescribed standards. The Working Group has repeatedly stressed that many conservation measures (or elements thereof) are only minimum standards and that vessels should strive to exceed these standards both to prevent compliance failure (see paragraph 6.45) and to achieve the best standards of conservation and management.

6.62 The Working Group noted that the proposed method of deriving a total compliance score depended on weighting elements of conservation measures. This implies that the contribution each conservation measure makes towards achieving the Commission's objectives is known, and that this knowledge exists for the elements within each conservation measure. Because this is not usually the case, making such an assessment would be very subjective. In addition, combining all conservation measures to derive a total score would be of limited utility because each is designed to address different conservation and management objectives.

6.63 The Working Group was also concerned that if a threshold total compliance score was less than 100%, this could result in fishers trading off between conservation measures with different weightings to achieve the threshold score. In addition, the method proposed does not address the problem of distinguishing between non-compliant vessels that fail by a small amount and those failing by a large margin.

6.64 More generally, the Working Group was unclear how the total compliance score would be interpreted or used. This is important, if the method is to be properly assessed and compared with other potential approaches.

6.65 The Working Group noted that the implications of a review of methods of assessing compliance were much more extensive than simply developing a new approach. Any new system would require a comprehensive evaluation of the contents of all conservation measures, of the instructions to observers and inspectors, of the nature, scope and content of the reporting mechanisms and of the details of the data validation, analysis and assessment protocols. It was particularly important to ensure that any new and improved system is based on data which are collected and reported in as accurate, unambiguous and consistent a fashion as possible.

Research into and Experiences with Longline Mitigation Measures

General

6.66 The Working Group reviewed the video 'Off the Hook' (WG-FSA-03/19) – an educational video on seabird avoidance for Alaska longline fisheries and noted that video is a

powerful medium to convey both the need for seabird conservation and seabird mitigation techniques to fishers. Video should be considered as an alternative or additional medium when updating the CCAMLR publication *Fish the Sea Not the Sky*.

6.67 WG-FSA-03/20 described approaches that combine fisher innovation and stakeholder cooperation with scientific data gathering to find solutions to seabird mortality in two US fisheries. The Working Group noted that this model could have useful application in relation to the French fisheries in Division 58.5.1 and Subarea 58.6.

6.68 A poster developed cooperatively by the National Audubon Society, the Hawaii Longline Association and BirdLife South Africa describing methods to handle birds caught live on longline hooks had been contributed to the IMAF page on the CCAMLR website. It was noted that while the methods might be useful in some fisheries, they would be less practical in others. It was agreed that the Secretariat obtain permission for Members to reproduce the poster for their own use.

6.69 To investigate the potential for using the rate of foraging attempts by black-browed albatrosses during longline setting operations as an index of their level of mortality, over a seven-month period in 2001/02, observers on board *D. eleginoides* longliners in the waters around the Falkland/Malvinas Islands collected data on black-browed albatross foraging behaviour (WG-FSA-03/91). A complex of environmental and operational variables was identified as significantly affecting the level of black-browed albatross mortality.

6.70 To reduce the environmental variation and to analyse a dataset with a higher level of mortality, a data subset (33-day period) was modelled. This identified a range of environmental and operational variables, including the rate of foraging attempts (in combination, explaining 55% of the variation). This was the first attempt to investigate the relationship in the southern hemisphere, and it suggests that without targeted experimental work to further investigate the relationship, caution should be exercised using the rate of foraging attempts of black-browed albatrosses as an index of their level of mortality.

6.71 Dr Fanta reported that experiments carried out on the oceanographic vessel *Soloncy Moura* of the Brazilian Institute for the Environment (IBAMA) found that blue-dyed bait and streamer lines significantly reduced the capture of albatrosses and petrels in the pelagic longline fishery. She was encouraged to submit the results of this research to the Working Group.

6.72 Experiences, relevant to mitigation of longline seabird by-catch, in respect of use of moonpools and video monitoring are reported in paragraphs 10.17 and 10.19 to 10.22.

Dyed Bait and Stealth Gear

6.73 The Working Group noted that Japanese scientists have conducted valuable research on the efficacy of blue-dyed bait as a mitigation strategy and encouraged Japan to submit the results of that work to the Working Group. It was further noted that Mustad is producing a blue, artificial bait (Nor Bait) for use in seabird by-catch mitigation in demersal longline fisheries. Results of recent trials of blue-dyed bait in Hawaii were inconclusive (WG-FSA-03/36).

6.74 The Working Group noted Dr Micol's report (paragraph 6.19) of higher rates of seabird by-catch when black hooklines were used on autoliners compared to white hooklines; this is contrary to the notion that less visible line or stealth fishing gear is likely to reduce seabird by-catch.

Line Weighting

6.75 WG-FSA-03/23 reported the results of an IW longline trial in the New Zealand ling longline fishery in November 2002. The trial ran for 16 days and involved the setting of 340 000 hooks. Up to 1 400 white-chinned petrels per day were in the vicinity of the vessel during the trial. A streamer line was used as a constant during the trial. Unweighted (UW) lines sinking at 0.1 m/s caught a total of 81 white-chinned petrels and one sooty shearwater, while IW lines sinking at 0.25 m/s caught only one white-chinned petrel. The trial is being repeated in October/November 2003 to increase the sample size, to examine interannual variation in effectiveness of IW gear as seabird deterrent and to trial additional mitigation treatments. Trials were also conducted on IW longlines in the New Zealand ling fishery in the winter of 2003 examining effects of IW longlines on the capture of target and non-target fish species. The Working Group noted that a proposal to run a similar trial on the effects of IW longlines (cf. UW lines) on toothfish CPUE in Subareas 88.1 and 88.2 in the 2003/04 season is pending (WG-FSA-03/17). The Working Group noted that once the current IW trial in New Zealand (measuring effects on seabird by-catch) and the trial proposed for Subareas 88.1/88.2 (measuring effects on target fish species) have been completed, there will be enough experimental evidence available on the performance of IW gear to warrant modification of Conservation Measure 25-02 to accommodate line-weighting provisions for autoline vessels. It is intended that the recommended changes to this conservation measure regarding line weighting for autoline vessels will be submitted to CCAMLR in 2004.

6.76 WG-FSA-03/81 reported the results of a trial conducted in 2003 to: (i) determine the sink rate of Spanish system hooklines with time-depth recorders; and (ii) interpret post hoc the seabird mortality estimates for the three line-weighting regimes in the trial by Agnew et al. (2000). The latter point was important given the low white-chinned petrel mortality recorded for autoline longlines sinking at 0.25 m/s referred to in WG-FSA-03/23 and because of the absence of line sink rate data for the Spanish system line-weighting regime required in Conservation Measure 25-02 (8.5 kg/40 m). Longlines carrying 4.25 kg/40 m, 8.5 kg/40 m and 12.75 kg/40 m sank to 20 m depth at 0.4 m/s, 0.54 m/s and 0.68 m/s respectively. These estimates are greater than the 0.25 m/s rate (with a single streamer line) shown to be successful against white-chinned petrels in New Zealand. Assuming the lines sank at similar speeds in the trial by Agnew et al. (2000), which also employed a single streamer line, the faster sinking Spanish system line caught white-chinned petrels at a higher rate than the slower sinking autoline line.

6.77 The Working Group noted that two observers had used time-depth recorders to measure the sink rates of Spanish system longlines in Subarea 48.3 in the 2002/03 fishing season. Average sink rates using a weighting regime of 8.5 kg at 40 m were recorded as 0.55 m/s (*Argos Helena*) and 0.45 m/s (*Koryo Maru No. 11*), similar to the results reported in WG-FSA-03/81.

6.78 The Working Group observed that reasons for this may be the faster setting speed of Spanish system vessels, which reduces the degree of coverage of hooklines beneath the aerial section of streamer lines or that streamer lines were not deployed in a comparable fashion. It noted that the distance astern at which the hookline reaches a specific depth integrates vessel speed and sink rate into a performance measure; this approach may be preferred to using sink rate specifications alone.

6.79 WG-FSA-03/62 reported a comparison between bottle tests and time-depth recorders (latest model: Wildlife Computers Mark 9) in measuring the sink rates of longlines in accordance with Conservation Measure 24-02. The paper highlighted some inconsistencies in measurements with the bottle test when used on UW longlines in certain weather conditions and cautioned that in high winds and seas, care must be taken in measuring UW longline sink rates with the bottle method. The Working Group noted that the bottle test was designed for hooklines with added weight and performs more reliably in this case (see WG-FSA-01/46).

6.80 Further studies on autoline and Spanish system vessels are necessary to fully understand the role of line sink rates in reducing seabird mortality by both types of fishing methods.

Underwater and Side Setting

6.81 Underwater setting chutes of two lengths (9 m and 6.5 m) and a new approach to seabird mitigation – side setting – were trialled in Hawaiian pelagic longline fisheries (WG-FSA-03/36). Side setting involved deploying snoods near the bow while using a device to restrict seabird access. Results suggest that side setting might be a useful mitigation measure, but results were inconclusive due to operational problems with the underwater setting chutes and the limited scale of the trials.

6.82 It was noted that side setting is being experimented with in demersal fisheries by one vessel in New Zealand. Several vessels side-set in Alaska with mixed performance in respect of seabird by-catch.

Streamer Lines

6.83 WG-FSA-03/18 presented a leaflet describing streamer line performance, material standards and aspects of streamer line rigging in Alaskan longline fisheries. It was suggested that a similar leaflet describing the concepts and goals of streamer line deployment would be a useful supplement in explaining to fishers the streamer line requirements in Conservation Measure 25-02.

6.84 WG-FSA-03/22 reviewed literature on the effectiveness of single and paired (or multiple) streamer lines and the existing CCAMLR streamer line performance and material standards. It proposed specific options for revisions of the streamer line requirement, and therefore served as a basis for Working Group discussion on revision of streamer line requirements for conservation measures. Although streamer lines are a key element to longline seabird by-catch mitigation worldwide, little research to determine their optimal design (materials and configuration) has been attempted. WG-FSA-03/22 introduced

information on the dive rates of white-chinned petrels on IW-50 hooklines set with single and paired streamer lines with an aerial extent of 60 m and for UW lines set with a single streamer line. White-chinned petrel dives peaked at a distance of 70 m astern of the vessel in all cases. In contrast to single streamer lines, dives on the hookline were virtually eliminated to 50 m astern when two streamer lines were deployed; however a definitive comparison was not possible because an acoustic cannon was fired randomly while the paired streamer lines were deployed. Specific research based on quantifiable measures of seabird behaviour (attacks and dives on baits) of white-chinned petrels, grey petrels, black-browed albatrosses and flesh-footed shearwaters was strongly recommended. The Working Group concurred that research on streamer line design and configuration is a high priority for all longline fisheries.

6.85 WG-FSA-03/22 proposed modifications to the CCAMLR streamer line requirements based on available information. Although it is likely that research will demonstrate that paired or multiple streamer lines are significantly more effective than single streamer lines at reducing the incidental mortality of all seabirds, this has not been tested scientifically for Southern Ocean seabirds. WG-FSA-03/22 also proposed two options as a starting point for discussion and action by WG-IMAF: (i) require that a minimum of two streamer lines be deployed during line setting in Convention Area waters based on the best available information; or (ii) maintain the status quo (require a single streamer line be deployed). In either case, explicit streamer line performance standards were strongly recommended. These included requiring an aerial extent of 80–100 m, and specifying the streamer line placement relative to the hookline and prevailing wind. Changes to required streamer line materials and configurations are also recommended.

Proposed Integrated Line-Weighting Trial in Subareas 88.1 and 88.2

6.86 WG-FSA-03/17 requested permission to conduct a line-weighting trial in Subareas 88.1 and 88.2 in the 2003/04 season. The trial will require the relaxation of Conservation Measure 41-09, which requires that vessels set longlines at ≥0.3 m/s, and Conservation Measure 24-02 with respect to line sink rate monitoring and Conservation Measure 25-02 with respect to daytime setting. The trial is an important stage in a work plan under way since June 2002 designed to examine the effectiveness of IW (fast sinking) longlines in reducing seabird by-catch. The work plan also examines the effectiveness of IW lines in catching target and non-target fish species. Hitherto trials have been conducted in the New Zealand ling longline fishery against white-chinned petrels, which is the commonest seabird species taken on longlines in Convention Area waters. The trial in New Zealand has also examined the effects of IW longlines on catch rates of ling and non-target fishes so the implications to both seabird conservation and fishing efficiency of IW longlines are understood.

6.87 The proposed trial in Subareas 88.1 and 88.2 will address the effects of IW longlines on catch rates of toothfish and non-target fish species. The trial will require the deployment of pairs of lines, consisting of one UW (normal) longline and one IW longline. Lines will be allowed to sink at their natural rates, which will be 0.1 m/s for UW and 0.25 m/s for IW. IW lines, which will reach fishing depth much sooner than UW lines, have the potential to catch more toothfish. Setting lines in pairs is fundamental to the trial as it will minimise the number of confounding effects. Since the trial will require exemption from Conservation

Measures 24-02, 25-02 and 41-09, and fishing will occur at all stages of the day/night cycle, alternative mitigation measures will be necessary to minimise seabird mortality during the trial. These measures have been outlined in WG-FSA-03/17. It is expected that seabird mortality will not occur during the trial.

6.88 The results of the trial will be important in developing recommendations for line-weighting provisions for autoline vessels in Conservation Measure 25-02 next year, and will aid in efforts to achieve swift uptake by autoline vessels of IW longlines both inside and outside the Convention Area. The trial could also have implications for fishing efficiency and stock assessment, particularly if it is demonstrated that IW lines affect the catch rates of toothfish and non-target fish species.

6.89 The Working Group fully supported the proposal and recommended that exemptions from the relevant elements of Conservation Measures 24-02, 25-02 and 41-09 be allowed. It commended the approach taken to understanding the effects of the use of IW longlines in relation to both seabird by-catch and fishing efficiency, and requested that the results be reported in full to the Working Group next year.

Research into and Experiences with Trawl Mitigation Measures

6.90 This topic is discussed, in relation to experiences in the Convention Area, in paragraphs 6.237 to 6.245 and SC-CAMLR-XXII/BG/28.

Revision of Conservation Measure 25-02 (previously 29/XIX)

6.91 The Working Group concluded in 2002 that several elements of Conservation Measure 25-02, including line-weighting specifications for autoliners, streamer line requirements and removing hooks from discards and offal should be reviewed and revised if appropriate (SC-CAMLR-XXI, Annex 5, paragraph 6.82). This year the Working Group reviewed the entire conservation measure and developed proposed changes based on tabled papers and other available information.

General

6.92 The Working Group recommended that the term ‘baited hooks’ be replaced with the term ‘hooklines’ (defined as the groundline or mainline to which the baited hooks are attached by snoods) throughout the conservation measure to better reflect the nature of the gear and operation of demersal fisheries.

Autoline Line Weighting

6.93 The Working Group noted that information on the performance of IW lines required to propose changes to the conservation measure is incomplete. Results of trials in the New Zealand ling fishery and possibly other fisheries will be available in 2004 and should provide

a basis for prescribing weighting regimes and/or performance standards for the sinking of autoline hooklines within this conservation measure. The Working Group concluded that autoline weighting requirements should be defined when more complete information is available in 2004.

6.94 The Working Group noted, however, that in the circumstances currently prevailing in the French EEZs in Subarea 58.6 and Division 58.5.1 (paragraphs 6.19 to 6.25), it was appropriate and necessary immediately to implement conservation measures including a recommended mandatory line-weighting specification based on existing experiences (paragraph 6.28). This recommendation (IW line of a minimum of 50 g/m or attachment of 5 kg weights at 50–60 m intervals) is included in the proposed revision to Conservation Measure 25-02 as an advisory specification.

Thawed Bait

6.95 The mandatory use of thawed bait in demersal longline fisheries in the Convention Area was discussed. Working Group members noted that with the requirement for Spanish longline vessels to weight lines as described in Conservation Measure 25-02, frozen baits did not affect line sink rate and were therefore of minimal conservation benefit.

6.96 For autoline vessels, the longline is negatively buoyant and the size and nature of cut baits are such that the use of frozen or semifrozen bait does not slow line sink rate. Therefore, the requirement to used only thawed bait provides minimal conservation benefit.

6.97 For autoline vessels fishing under Conservation Measure 24-02, with the requirement to meet a minimum longline sink rate, the mandatory requirement to use thawed bait is of minimal conservation benefit.

6.98 Given the generally high level of compliance with line weighting on Spanish longline vessels, the 100% compliance with line-weighting requirements under Conservation Measure 24-02 and the current knowledge of the autoline fishing method, the Working Group recommended that the element of the conservation measure relating to thawed bait was no longer relevant and should be deleted.

Haul Seabird Deterrent

6.99 The Working Group noted that experiences by Australian fishers last season in two longline fisheries (Divisions 58.4.2 and 58.5.2) identified a potential issue with seabird by-catch when hauling longlines. During two cruises large numbers of giant petrels and Cape petrels regularly attended the vessels. While no birds were caught during line setting in this fishery, no doubt due to strict adherence to line-weighting requirements, eight birds were caught during haul operations. The problem may have been exacerbated by the requirement that both vessels retained all offal during fishing operations, making the haul area the only source of food from the vessel. The Working Group agreed that the offal retention policy was to be encouraged, and reviewed ways of minimising by-catch around the haul site.

6.100 In Division 58.5.2, one vessel, the *Janas*, was able to minimise interactions by using a haul seabird deterrent, which discouraged birds from accessing baits when hauling. In Division 58.4.2, the *Eldfisk* reported successfully limiting seabird interactions at the haul using a fire hose aimed into the water near where the line was hauled: no birds were caught while hauling. In Subarea 48.3, the *Koryo Maru No. 11* deployed a buoy suspended from a 4 m boom 2 m aft of the hauling bay on most (66%) hauls – no birds were taken during hauling. In Subarea 88.1, the *Volna* deployed a form of haul seabird deterrent; no birds were taken during hauling. The Working Group noted that seabird by-catch around the haul was a problem in other Convention Area fisheries, particularly in areas assessed by the group as having an average to high or high levels of risk. It therefore recommended that Conservation Measure 25-02 include provision for use of a haul seabird deterrent while hauling longlines in these fisheries. The haul deterrent should be configured such that it incorporates considerations for other non-target by-catch (e.g. cutting elasmobranchs from the line).

Streamer Line

6.101 The Working Group noted that the streamer line requirements prescribed in Conservation Measure 25-02 were based on observations in pelagic fisheries and have remained virtually unchanged for 13 years. Taking particular note of the recommendations in WG-FSA-03/22 (see paragraphs 6.84 and 6.85), the Working Group agreed that the aerial extent of a streamer line and its placement relative to prevailing winds over the hookline are critical to the performance of a streamer line. The streamer line specification in Conservation Measure 25-02 could be improved by addressing these two aspects of streamer line performance. Therefore, the Working Group recommended that the conservation measure encourage vessels to optimise the aerial extent of streamer lines and to deploy streamer lines in such a way that the aerial extent prevents bird attacks on the hookline as far astern of the vessel as possible, even in crosswinds. Although the Working Group had recommended that information be gathered through observers on the effect of aerial coverage of streamer lines on their effectiveness as a seabird deterrent in 2002 (SC-CAMLR-XXI, Annex 5, paragraph 6.74), such data were not collected and therefore information on the aerial extent of streamer lines used in Convention Area waters is not available. The Working Group strongly recommended that these data be collected in the forthcoming season, and provided suggestions as to how this might be done (paragraphs 10.26 and 10.27).

6.102 The height at which the streamer line is attached to the vessel, the tension created by the object towed, the weight of the streamer line materials and vessel speed govern the aerial extent achieved by a streamer line. Because data on the aerial extent of streamer lines were not available, the Working Group found it difficult to prescribe a minimum aerial extent in the conservation measure at this time. Recognising that the height of the attachment point is both a critical component of aerial extent and a measurable requirement that can be altered with minimal effort and expense by vessel operators, the Working Group recommended that the current requirement of a 4.5 m attachment point be increased to 7 m, in preference to requiring an explicit aerial extent.

6.103 Noting that streamer lines are least effective in crosswinds, the Working Group recommended that the conservation measure require that the streamer line attachment point be on the windward side of the hookline and, to the extent possible, that the required towed object be maintained directly astern of the windward vessel attachment point. These

requirements would lead to the streamer line being positioned above the hookline in crosswinds, maximising the effectiveness of streamer lines in conditions that are known to make streamer lines least effective.

6.104 The Working Group noted that the current requirement that the streamer line be 3 mm in diameter is unnecessary and recommended it be deleted. Further, it noted that fishers should have the ability to choose a line diameter that is most appropriate to their vessels. The possibility that the 150 m length requirement be changed was discussed; however no data were available to recommend an alternative length.

6.105 The Working Group noted that data on the optimal spacing and materials for streamers are also not available due to the lack of research in this area. The Working Group recommended that the existing 5 m spacing be retained in the conservation measure and that this spacing be described as a maximum in order to allow vessels to experiment with shorter streamer intervals as appropriate. The Working Group noted that the number of streamers currently required (five) would be insufficient in almost all circumstances and that this situation would be further exacerbated as fishers optimise the aerial extent of streamer lines. Given these observations, the Working Group recommended that streamers be attached throughout the aerial extent of the line, beginning at 5 m from the stern of the vessel, to maximise the effectiveness of the aerial extent of the streamer line. Increasing the height of the attachment point to the vessel and encouraging optimising the aerial extent of the streamer line makes existing streamer length requirements inappropriate. The Working Group recommended revision to reflect that each streamer should extend to the water as measured in the absence of wind and swell, and that an appropriate range of streamer line lengths be specified.

6.106 The Working Group also recommended that the swivel requirements be modified to reflect the intent of these requirements – i.e. that streamers do not become twisted around the streamer line or with each other and to allow individual vessels to determine the best method to achieve that intent.

6.107 The Working Group noted that limited information was available on the conservation benefits of two streamer lines compared to a single line with regard to Southern Ocean seabird species. The Working Group recommended that the use of two streamer lines – attached so that when deployed they are on either side of the hookline – be encouraged but not mandatory in the conservation measure, due to the lack of definitive evidence at this time.

Fish Hook Removal

6.108 The Working Group noted that full compliance with the existing requirement for fish hooks to be removed from offal and fish heads prior to discharge, was difficult to achieve or measure. It recommended that the existing advice be revised to include a requirement that a system be implemented by the vessel to remove fish hooks from offal and fish heads prior to discharge. This recommendation would allow the intent of the existing requirement to be achieved while making compliance assessment feasible.

6.109 Taking account of the foregoing information and suggestions, the Working Group prepared a draft revision of Conservation Measure 25-02, which is attached as Appendix F.

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

6.110 As no information is available on seabird by-catch rates from the unregulated fishery, estimates of the incidental mortality of seabirds during IUU fishing within the Convention Area present a number of difficulties, requiring various assumptions to be made.

6.111 In previous years the Working Group has prepared estimates using both the average catch rate for all cruises from the appropriate period of the regulated fishery in a particular area and the highest catch rate for any cruise in the regulated fishery for that period. Justification for using the worst catch rate from the regulated fishery is that unregulated vessels accept no obligation to use any of the mitigation measures prescribed in CCAMLR conservation measures. Therefore catch rates, on average, are likely to be considerably higher than in the regulated fishery. The method used is described in full in SC-CAMLR-XXII/BG/19.

6.112 Last year a new method for estimating unregulated catch of fish and birds in Subarea 48.3 was presented (WG-FSA-02/4 and 02/5). The estimate of bird by-catch rate was made by bootstrapping the observed catch rates from fishing operations in 1996/97. The fleet in Subarea 48.3 in 1996/97 implemented relatively few mitigation measures and has been considered to provide the best estimate the Working Group has of likely rates in the unregulated fishery in this subarea. A problem with this analysis is that one vessel, the *Isla Isabel*, had a bird by-catch rate an order of magnitude greater than other vessels fishing that year (summer rate: 11.641 birds/thousand hooks compared to an average of 0.792 birds/thousand hooks for the other vessels).

6.113 WG-FSA-02/4 and 02/5 addressed this problem by running two simulations, one with and one without the *Isla Isabel* data. Following comments by the Working Group last year (SC-CAMLR-XXI, Annex 5, paragraphs 6.90 to 6.92), WG-FSA-03/56 repeated the analysis using *Isla Isabel* data weighted by the number of hooks observed on each cruise.

6.114 The Working Group agreed to apply the method developed in WG-FSA-02/4 and 02/5 to the relevant information for other statistical areas, using particularly the data presented in Table 31 of WG-FSA-98 (SC-CAMLR-XVII, Annex 5) for the by-catch rates of birds in the 1996/97 fishing season in Subarea 58.7. These data were previously used to calculate the unregulated fishery by-catch rates in Subareas 58.6 and 58.7 and Divisions 58.5.1 and 58.5.2 (SC-CAMLR-XVII, Annex 5, paragraph 7.75). These data have also been used to represent the bird by-catch data appropriate to Division 58.4.4 and Subarea 88.1, adjusted downwards by 40% to reflect the lower seabird vulnerability in this division and subarea (SC-CAMLR-XVIII, Annex 5, paragraph 7.62).

6.115 One of the problems with the bootstrapping method is that there are rather few data from which to bootstrap. A decision was therefore made to use, as bootstrap data for Subareas 58.6 and 58.7 etc., the individual cruise data in WG-FSA-98, Table 31 (SC-CAMLR-XVIII, Annex 5) where the number of observed hooks was not null. For Subarea 48.3, the data used were the individual cruise data presented in Table 1 of

WG-FSA-03/56. Data were separated into summer (October–March) and winter (April–September) periods[1]. The resulting median and 95% confidence intervals for seabird by-catch rates for the unregulated fishery are given below.

Subarea/Division	Season	Lower 95%	Median	Upper 95%
48.3	Summer	0.39	0.741	11.641
	Winter	0	0	0.99
58.6, 58.7, 58.5.1, 58.5.2	Summer	0.45	0.55	1.45
	Winter	0.01	0.01	0.07
58.4.4, 88.1	Summer	0.27	0.33	0.87
	Winter	0.006	0.006	0.042

6.116 The Working Group agreed that these values should be used to estimate seabird by-catch in IUU *Dissostichus* spp. fisheries in the Convention Area in 2003. It was also agreed that these values should be applied to the toothfish removals data used to generate similar estimates for previous years.

6.117 It was noted that in addition to the change to seabird by-catch estimates resulting from using the new seabird by-catch rates, the review by the Secretariat and WG-FSA of data on IUU removals of *Dissostichus* spp. resulted in several changes to historical data on total removals. These changes have been incorporated into the reanalysis of the historical data. For last year (2002), the only change in the data on removals relates to Division 58.5.2.

6.118 The estimates of potential unregulated seabird by-catch in the Convention Area in 2002/03 and comparison with estimates for previous years are provided in detail in SC-CAMLR-XXII/BG/19.

6.119 The overall estimated total for the whole Convention Area in 2002/03 indicates a potential seabird by-catch in the unregulated fishery of 17 585 (95% confidence interval range of 14 412 to 46 954) seabirds. The values for this and previous years are summarised in respect of different parts of the Convention Area in Table 6.8.

6.120 The Working Group indicated that it would appreciate further investigation of the representation of features of these data. As an illustrative example, Figure 6.2 was prepared, which shows median interquartile and range values for the complete data from 1996 to 2003 for the relevant subareas and divisions of the Convention Area. The advice of the Scientific Committee was sought on the preferred presentation of these data.

6.121 In comparison with estimates for previous years, calculated in identical fashion, the value for 2003 is the lowest reported since estimates started in 1996. Although seabird by-catch values for 1998 to 2000 are not dissimilar to 2003, the 2003 value is only about 70% of the values for 2001 and 2002 (SC-CAMLR-XXII/BG/19). This presumably reflects a commensurate reduction in toothfish removals or changes in the areas from where IUU fishing occurs.

[1] With the exception of the *Garoya* cruise in Subarea 58.7, which took place from 5 April to 10 May 1997, but had a very high by-catch rate of 1.88 birds/thousand hooks, which probably more appropriately reflects a summer rate.

6.122 Based on the data since 1996 (SC-CAMLR-XXII/BG/19), an estimated total of 187 155 (95% confidence interval range of 152 381 to 546 567) seabirds have been killed by these vessels. Of these:

(i) 41 897 (95% confidence interval range of 33 904 to 132 011) were albatrosses, including individuals of four species listed as globally threatened using the IUCN threat classification criteria (BirdLife International, 2000);

(ii) 7 417 (95% confidence interval range of 6 059 to 20 742) were giant petrels, including one globally threatened species;

(iii) 116 130 (95% confidence interval range of 95 728 to 335 932) were white-chinned petrels, a globally threatened species.

6.123 The Working Group noted that changes to the methodology used to estimate the by-catch of seabirds in unregulated fisheries meant that values estimated this year are approximately half those in previous reports, including last year in SC-CAMLR-XXI/BG/23. However, it was noted that the median value used for IUU fisheries in Subarea 58.6 and Division 58.5.1 (and adjacent areas) of 0.55 birds/thousand hooks is similar to – or even lower than – the values in regulated fisheries in these areas in recent years: 0.456 birds/thousand hooks in 2002, 0.635 birds/thousand hooks in 2001, 2.937 birds/thousand hooks in 2000 and 0.736 birds/thousand hooks in 1999.

6.124 The Working Group requested that seabird by-catch rates used to characterise IUU fishing be reviewed next year to ensure that appropriately consistent relationships to values reported for regulated fisheries are maintained.

6.125 As in previous years, it was emphasised that these values are very rough estimates (with potentially large errors). The present estimates should only be taken as indicative of the potential levels of seabird mortality occurring in the Convention Area due to unregulated fishing and should be treated with caution.

6.126 Nevertheless, even taking this into account, the Working Group endorsed its conclusions of recent years that:

(i) the levels of loss of seabirds from the populations of these species and species groups are still broadly consistent with such data as exist on the population trends of these taxa, including deterioration in conservation status as measured through the IUCN criteria;

(ii) such levels of mortality continue to be unsustainable for the populations of albatrosses and giant and white-chinned petrels breeding in the Convention Area.

6.127 Many albatross and petrel species are facing potential extinction as a result of longline fishing. The Working Group again urgently requested the Commission to continue to take action to prevent further seabird mortality by unregulated vessels in the forthcoming fishing season.

Incidental Mortality of Seabirds during Longline Fishing
outside the Convention Area

6.128 The Working Group considered papers reporting on seabird mortality from fisheries conducted outside the CCAMLR Convention Area but which affected birds that breed within it.

6.129 WG-FSA-03/47 and 03/52 reported, respectively, on New Zealand and Australian research relevant to seabirds vulnerable to fisheries mortality. None of the papers referenced deals specifically with birds that breed in the Convention Area, and which may be affected by fisheries mortality outside the area, though fisheries effects on populations breeding elsewhere are covered in some studies.

6.130 Mr Arata reported that Uruguayan scientists had recently collected seabird by-catch data from their EEZ. This had indicated high rates of seabird mortality, including of birds potentially from the Convention Area. Uruguay was encouraged to submit a report for consideration at the next meeting of the Working Group.

6.131 No reports on seabird mortality in regions adjacent to the Convention Area were received from any country. Members were reminded of the standing request for submission of such data.

6.132 WG-FSA-03/09 reported on the level of dietary dependence of black-browed albatrosses on fisheries offal in the Chilean region. The study showed that 69–89% of diet mass, depending on the year, was composed of fishery discards. Prey species identified in the diet showed that these were most likely mainly to come from Chilean national fisheries, mainly for hoki, southern blue whiting and golden kingklip, corroborated by satellite-tracking information reported last year (SC-CAMLR-XXI, Annex 5, paragraphs 6.120 and 6.121). Of particular relevance to the conservation measures was the identification of longline hooks in three diet samples from Diego Ramírez Islands, Chile.

Research into the Status and Distribution of Seabirds

6.133 Following last year's renewed request for information summarising national research on seabirds (albatrosses and *Macronectes* and *Procellaria* petrels) vulnerable to longline fisheries interactions, papers were presented by New Zealand (WG-FSA-03/47), Australia (WG-FSA-03/52) and the USA (WG-FSA-03/93). Reference to research on albatrosses by Chile is included in WG-FSA-03/10 and 03/11, and research by the UK and South Africa in WG-FSA-03/37. Further reference to relevant research by South Africa is included in WG-EMM-03/8, 03/11 and 03/41. Some details of research by France are included in WG-EMM-03/32 and 03/41. Of countries known to be conducting relevant research, no specific reports were received from Argentina and the UK.

6.134 Previously the research summary by the USA included details of current research into methods to monitor and mitigate seabird by-catch, which was welcomed by the Working Group as a valuable contribution to its work. Consequently all Members were requested to include details of mitigation research in their annual research summaries to update the

Working Group on the current status of relevant mitigation research programs (SC-CAMLR-XXI, Annex 5, paragraph 6.111). As the USA was again the only Member to provide this information, the Working Group reiterated the request for inclusion of mitigation research in national research reports.

6.135 In order to compare assessments of levels of fishing effort and seabird by-catch with seabird population dynamics and foraging ranges, Members have been requested to provide any new or outstanding details of seabird population and foraging studies. As only New Zealand and Australia provided this information (WG-FSA-03/47 and 03/52), the review of the level of information available for each population that was previously forecast (SC-CAMLR-XXI, Annex 5, paragraph 6.113) remains outstanding.

6.136 Information on population dynamics and foraging studies provided to date has been summarised into SC-CAMLR-XXII/BG/18, which updates SC-CAMLR-XXI/BG/22. All Members were again requested to provide more comprehensive national research reports so that appropriate assessments can be undertaken.

6.137 The Working Group recommended that in order to streamline and achieve more complete and representative reporting for the 2004 meeting, reporting formats would be reviewed and that the Secretariat would forward a reminder to all members of WG-IMAF to submit reports during the intersessional period.

6.138 The most recent assessments of the global conservation status of albatrosses, giant petrels and *Procellaria* petrels are reflected in SC-CAMLR-XXII/BG/18. This summary reflects the revised status of six species of albatrosses whose threatened status has been upgraded according to IUCN Red List categories (WG-FSA-03/101). Of these six species, four have been identified as being at risk to fisheries-related mortality in the Convention Area, and longline fishing has been identified as the prime factor responsible for greatly increasing their risk of extinction.

6.139 Black-browed albatross, listed as Near Threatened in 2000, and Vulnerable in 2002, was upgraded to Endangered, with new census information from the Falkland/Malvinas Islands showing that the species is likely to decline by over 50% over three generations (65 years) (WG-FSA-03/101). Black-browed albatrosses breed at 12 sites, with most birds occurring at the Falkland/Malvinas Islands, South Georgia and Chile. Numbers at the Falkland/Malvinas Islands, with 60% of the world's population, have declined at most breeding sites, with sharp decreases at the two major colonies. Monitored populations at South Georgia also continue to decline.

6.140 Information in WG-FSA-03/101 reported that the decline of black-browed albatrosses may be attributable to increased longline fishing effort and/or the development of new longline fisheries over much of the Patagonian shelf, around South Georgia, off the southern African coast, and in the Southern Ocean. Black-browed albatrosses are one of the most frequently killed species in many longline fisheries, and they are also killed in substantial numbers in many trawl fisheries.

6.141 Atlantic yellow-nosed albatross has been upgraded from Near Threatened in 2000 to Endangered in 2003 due to population declines recorded in long-term study colonies on Gough and Tristan da Cunha Islands, indicating a 58% reduction over three generations

(71 years) (WG-FSA-03/37). If threats do not abate, population models suggest that the species may need to be classified as Critically Endangered, the final category before becoming Extinct.

6.142 The status of Indian yellow-nosed albatross, listed as Vulnerable in 2000, has also been upgraded to Endangered on the basis of an estimated overall decline of 63% over three generations (71 years), based on data from the stronghold of the population on Amsterdam Island. This decline, reported in WG-FSA-03/101, is the result of high adult mortality and poor recruitment apparently owing to interactions with fisheries and disease (WG-EMM-03/32). During the breeding season, Indian yellow-nosed albatrosses have been taken by longliners fishing for *D. eleginoides* in the vicinity of the Prince Edward Islands.

6.143 Sooty albatross has been upgraded from Vulnerable to Endangered on the basis of an estimated 75% decline over three generations (90 years), potentially as a result of interactions with fisheries (WG-FSA-03/101). The change in status was based on trends recorded at three sites. In the southeast Atlantic Ocean sector, the Gough Island population appears to have decreased by about 50% over 28 years. In the western Indian Ocean sector the Marion Island population declined by 25% between 1990 and 1998, and on Possession Island (Crozet) the population declined by 58% between 1980 and 1995. If these trends are found to be consistent at further sites, the species may qualify as Critically Endangered.

6.144 In recent years 20 species of albatrosses and petrels have been identified as being at risk from longline fisheries in the Convention Area. The current status of these species, as reflected in SC-CAMLR-XXII/BG/18 which updates SC-CAMLR-XXI/BG/22, is listed below.

Critically Endangered	Endangered	Vulnerable	Near Threatened
Amsterdam albatross	Northern royal albatross	Wandering albatross	White-capped albatross
Chatham albatross	Sooty albatross	Antipodean albatross	Light-mantled albatross
	Black-browed albatross	Southern royal albatross	Northern giant petrel
	Atlantic yellow-nosed albatross	Grey-headed albatross	Grey petrel
	Indian yellow-nosed albatross	Campbell albatross	
		Salvin's albatross	
		Buller's albatross	
		Southern giant petrel	
		White-chinned petrel	

6.145 The Working Group noted with serious concern the increasing number of albatross and petrel species that were becoming more immediately threatened with extinction, as reported by WG-FSA-03/101, largely as a result of fisheries interactions. Croxall and Gales (1998) noted that, based on 1997 information, albatrosses had the highest proportion of threatened species in any bird family that has more than a single species. The recent changes in threatened species status in the family makes the situation for albatrosses increasingly serious.

6.146 In order to monitor these threatened species, and more effectively mitigate the threats they face, the Working Group encouraged Members to support: censuses and monitoring at key breeding sites; continuation of existing long-term population studies; determination of foraging distribution for populations where this is not known; evaluation of all significant

influences on survival, including enhanced monitoring of seabird by-catch; and promotion of adoption of best-practice mitigation measures in longline and trawl fisheries within the species' ranges.

6.147 Prof. Croxall reported that the BirdLife International Seabird Conservation Programme has now developed a GIS database for the archiving and analysis of satellite and geolocation tracking data for albatrosses and petrels (see SC-CAMLR-XXI, Annex 5, paragraph 6.159(iii)). A workshop to achieve this was held at Gordons Bay, South Africa, from 1 to 5 September 2003 and a report will be available to CCAMLR in the forthcoming intersessional period. Of potential interest to CCAMLR will be new data on the density distribution of foraging by albatrosses and petrels, including in relation to FAO statistical areas, to the boundaries of RFMOs and to the distribution of effort in longline fisheries.

6.148 Information on a previously undescribed population of black-browed albatrosses at Evangelistas Islets, Straits of Magellan, Chile, was reported in WG-FSA-03/10. The population was censused from aerial photographs taken in October 2002 which yielded a population estimate of 4 670 breeding pairs. This new record raises to four the number of islands in Chile where black-browed albatrosses breed.

6.149 In order to update information on the status of black-browed and grey-headed albatrosses breeding in Chile, censuses were conducted during October 2001 (Diego de Almagro) and October 2002 (Evangelistas, Ildefonso and Diego Ramírez) at all known breeding locations (WG-FSA-03/11). Population sizes were determined using boat-based, aerial and ground-based photography and ground counts. Black-browed albatrosses occur at all four locations, whilst grey-headed albatrosses, with the exception of eight pairs observed at Ildefonso, are confined to Diego Ramírez. Total estimated population sizes for the four known breeding locations in Chile are 123 000 pairs (20% of global population) of black-browed albatrosses and 16 400 pairs (20% of global population) of grey-headed albatrosses. Based on this new information, Chile is now recognised as holding the second-largest population of black-browed albatrosses in the world.

6.150 While estimates of the black-browed and grey-headed albatrosses have been obtained for Diego Ramírez and Ildefonso on a few occasions previously (summarised in WG-FSA-03/11), lack of information of methods and inconsistencies in timing of census precluded any conclusion regarding population trends. Integration and comparison of a range of survey techniques in this study have yielded valuable methodological insights into surveying remote and relatively inaccessible albatross colonies.

6.151 Population dynamics and trends of Atlantic yellow-nosed albatross was described with respect to the effects of mortality from longline fisheries operating in the South Atlantic (WG-FSA-03/37). Population demographic data collected from Gough Island and Tristan da Cunha showed that the number of breeding birds was strongly correlated between the two islands, with both colonies declining at 1.2% per annum. Using a range of measured demographic parameters, modelling predicts annual rates of decrease of 1.5 to 2.8% on Gough Island and 5.5% on Tristan da Cunha. Comparison with congeners suggests that the observed and predicted decreases are most likely to be caused by low adult and immature survival rates.

6.152 The population trends of surface-nesting seabirds at Marion Island measured between the 1990s and 2002/03 showed different trends, but for the majority of species, numbers

decreased (WG-EMM-03/08). For the species at risk from fisheries interactions in the Convention Area, decreases in numbers of sooty albatrosses, light-mantled albatrosses, southern giant petrels and possibly northern giant petrels are suggested to have resulted from mortality of birds in longline fisheries. Populations of wandering and grey-headed albatrosses at Marion Island have fluctuated during the period, increasing in 2000/01 and 2001/02 before decreasing to low levels in 2002/03. The Working Group welcomed the synthesis of this long-term and multi-species population data and encouraged the continued collection of population data of species being influenced by both environmental (climate change) and anthropogenic (fisheries mortality) influences.

6.153 The Prince Edward Islands support substantial proportions of the global populations of a number of surface nesting seabirds. Populations of most of these have decreased at the islands since the 1980s and 12 of the 16 species are regarded as regionally or internationally threatened. The main cause of population decrease for the albatrosses and giant petrels is thought to be by-catch mortality in longline fisheries. The Working Group supported the recommendation in WG-EMM-03/14 that a combination of research, monitoring and legislation will help conserve the surface-nesting seabirds of the Prince Edward Islands into the 21st century.

6.154 WG-EMM-03/32 reported that two pathogenic diseases (avian cholera and *Erysipelas* bacteria) have been identified in yellow-nosed albatrosses at Amsterdam Island and are suspected (but not confirmed) to be present in Amsterdam and sooty albatrosses (WG-EMM-03/32). The avian cholera infection may have been influenced by the increase in temperature in the Indian Ocean during the 1970s but more likely resulted from contamination by poultry introduced to Amsterdam Island in the 1960s.

6.155 The diseases identified are suggested to result in elevated chick mortality, and possibly death of infected adults (WG-EMM-03/32). The most threatened albatross species, the Amsterdam albatross, already classified as Critically Endangered, has been reduced to 20 pairs breeding annually and increased chick mortality will further jeopardise the survival of this species. The Working Group noted the importance of surveillance of disease and other factors that can influence survival of threatened species, but was cautious about the interpretation of the level of significance of disease in influencing population trends, given the limited data (small sample size) presented, especially for adult birds, and the isolation of the diseases only in Indian yellow-nosed albatrosses.

6.156 Although the world's oceans have been warming in recent decades, the impact on the biota is poorly understood because of the paucity of long-term datasets on marine organisms. WG-EMM-03/53 reported that climatic changes in the southern Indian Ocean over the last 50 years were particularly important in the sub-Antarctic sector. During that period, with a time lag of two to nine years, the population size of most seals and seabirds monitored on several breeding sites has decreased severely, whilst two species have increased at the same time (king penguin and Amsterdam (sub-Antarctic) fur seal). The Working Group recognised the importance of the long-term monitoring studies of population size, complemented by demographic parameters, in the Southern Ocean that can provide valuable signals to changes occurring in the marine environment. The results of these studies show that climate change and ocean warming can have important effects on the biotic components of marine ecosystems.

6.157 WG-FSA-03/82 reviewed progress in the development of genetic tests to validate the identity of albatross species killed by fishing activities. Simple, widely applicable tests now exist for all albatross species except those which distinguish the following species pairs: Antipodean and Gibson's albatrosses (*Diomedea antipodensi* and *D. gibsoni*); northern and southern royal albatrosses (*D. epomophora* and *D. sanfordi*); southern and northern Buller's albatrosses (*Thalassarche bulleri* and *T. platei*).

6.158 The Working Group recognised that although genetic techniques can identify the population-origin of albatrosses, population-origin is not synonymous with island-origin due to the extent of inter-island movement of some albatrosses (e.g. WG-EMM-03/41). This does not diminish the importance of retaining by-catch specimens and the Working Group reiterated the requirement that Members retain specimens whenever possible and report annually the extent and location of their seabird by-catch collections.

6.159 WG-EMM-03/41 reported the exchange of wandering albatrosses between the Crozet Islands and the Prince Edward Islands (1 068 km apart). Adults and fledgling albatrosses have been banded at these locations since 1960 and 1976 respectively. Since banding commenced, 61 birds have been recorded in both locations and 18 fledglings banded in the Crozet Islands have subsequently bred at the Prince Edward Islands. The Working Group agreed that the wandering albatrosses of these two island groups form a metapopulation and should be treated as a single conservation unit.

6.160 Prof. Croxall reported that Dr P. Ryan (South Africa) is currently examining the use of genetic techniques to identify the island-origin of white-chinned petrels, including birds killed by fishing activities. Preliminary trials indicate that these genetic techniques may also be directly applicable to *Macronectes* species.

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

Second International Fishers' Forum (IFF2)

6.161 The Western Pacific Regional Fishery Management Council hosted the Second International Fishers' Forum (IFF2) in Honolulu, Hawaii, USA, from 19 to 22 November 2002 (WG-FSA-03/25). In November 2000, New Zealand hosted the First International Fishers' Forum (IFF1) which focused on methods to solve the incidental catch of seabirds by longline fishing gear. IFF2 built on the efforts made by the participants at IFF1, and also included discussions on sea turtle biology and behaviour, and on reducing and minimising the harmful effects of interactions between sea turtles and longline gear. The Commission noted its support of this international initiative (CCAMLR-XXI, paragraph 6.11(iv)).

6.162 A total of 236 participants from 28 countries attended IFF2. Individuals from 13 of the 24 CCAMLR Members were in attendance. Issues were discussed and perspectives exchanged through plenary and breakout sessions. Sessions included: seabird mitigation and research; turtle mitigation and research; data collection; education/communication; obstacles, lessons learnt and ways forward; international agreements and national approaches; and fishers' incentives.

6.163 IFF2 concluded with a resolution by participants which included further encouragement to the FAO, relevant regional fisheries management organisations and national agencies to collaborate in the implementation and monitoring of the IPOA to reduce incidental catches of seabirds in longline fisheries.

6.164 The Western Pacific Regional Fishery Management Council has produced an Executive Summary of IFF2, available at www.wpcouncil.org/iff2/WPR%20Fishery_rev21802.pdf. The full text of the IFF2 resolution is included therein.

6.165 The Working Group was encouraged by the continued participation of multiple stakeholders in international fora such as this. It encouraged CCAMLR Members that have not yet hosted an IFF to consider hosting the next meeting in the near future.

6.166 Given the seabird by-catch issues in trawl fisheries that the Working Group has been addressing in recent years, it urged the host of IFF3 to consider including a session on this topic.

Agreement on the Conservation of Albatrosses and Petrels (ACAP)

6.167 Since 1999, parties to CMS have been pursuing the development of ACAP (WG-FSA-03/53). CCAMLR has indicated its support of this international initiative (CCAMLR-XXI, paragraph 6.11(iv)). To date, ACAP has nine signatories (Australia, Brazil, Chile, Ecuador, France, New Zealand, Peru, Spain and the UK) and four (Australia, New Zealand, Ecuador, and Spain) of the necessary five ratifications required for entry into force.

6.168 It is anticipated that the remaining ratification required for ACAP to enter into force will occur within the next few months and that the first meeting of the parties will be held early in 2004. Both the UK and South Africa have confirmed their intention to ratify shortly.

6.169 Australia, in its role as Interim Secretariat, has established a website for ACAP with the aim of keeping all Range States and interested organisations informed of current progress with ACAP and related issues. Further information can be obtained at: www.deh.gov.au/coasts/species/seabirds.

6.170 The Working Group recognised the importance of the proposed conservation actions of ACAP and is hopeful that the first meeting of the Parties will occur prior to the next Working Group meeting. The Working Group encouraged:

(i) Members of CCAMLR to ratify ACAP and to support the active participation of scientists and fishers concerned with and working on the conservation of albatrosses and petrels;

(ii) support for the attendance and representation of CCAMLR at the next ACAP meeting.

FAO's International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA-Seabirds)

6.171 The Working Group noted the Commission's continued request to Members to develop and implement national plans in support of the FAO IPOA-Seabirds (CCAMLR-XXI, paragraph 6.11(v)).

6.172 Last year the Commission endorsed the Scientific Committee's advice to renew attempts to obtain progress reports on the development and implementation of FAO NPOA-Seabirds from Members, especially Argentina, Brazil, Chile, European Community, France (in respect of overseas territories) and Uruguay, with responsibilities for areas adjacent to the Convention Area or conducting fisheries in these areas (CCAMLR-XXI, paragraph 6.11(v)).

6.173 The 25th session of the FAO's COFI met from 24 to 28 February 2003, in Rome, Italy. FAO requested Member States to complete questionnaires on its implementation of the Code of Conduct for Responsible Fisheries and the IPOAs. These self-assessments are compiled into a single report and submitted to COFI. Of the 68 FAO Members reporting longline fisheries, only three reported they had developed NPOAs (Brazil, Egypt and the USA) and three reported partially complete NPOAs (European Community, Spain and Sweden).

6.174 The Working Group noted the following new information regarding the status of development of NPOA-Seabirds:

(i) New Zealand released a draft NPOA and will finalise the plan in November 2003 (WG-FSA-03/41). The NPOA addresses seabird by-catch in the longline and trawl fisheries primarily, and proposes a mix of voluntary Codes of Practice developed for each fishery, economic incentives, regulations and penalties for irresponsible fishing practices. The codes will specify fishing practices, maximum by-catch limits, and methods to monitor compliance, education and public awareness. Mandatory measures would be used if necessary. The New Zealand draft NPOA is available at www.doc.govt.nz.

(ii) Australia's NPOA will build on and extend the Threat Abatement Plan that is currently being implemented to reduce seabird by-catch (WG-FSA-03/51). Once the Assessment Report on seabird interactions with longline fisheries is finished, the NPOA can be completed. It is expected that the NPOA will be completed by mid-2004 and submitted to FAO's 26th Session of COFI in 2005. The Draft Assessment Report is available at www.affa.gov.au.

(iii) Dr Fanta reported that Brazil produced a draft NPOA in April 2003. The draft was prepared for the Brazilian Institute of the Environment by the Albatross Institute, a non-governmental organisation. The draft NPOA will be finalised through a consultative process including scientists, representatives of the Ministry of the Environment, the Secretary of Fisheries and Aquaculture of the Presidency of the Republic, the Ministry of Foreign Affairs, fishers and fishing company owners. Dr Fanta has been invited to provide information on measures taken in CCAMLR longline fisheries to avoid the incidental catch of seabirds. This plan will be presented at a BirdLife International/FAO workshop in Chile in December 2003.

(iv) Dr Sullivan reported that the Falkland/Malvinas Islands Plan of Action is in the advanced stages of industry consultation; it is intended to commence the process of formal adoption early in 2004. The intent of the FAO IPOA-Seabirds was interpreted to put in place management strategies to achieve a reduction in fisheries-related seabird mortality in general. Therefore, given the high level of trawl-related mortality in Falkland/Malvinas Islands waters, a draft plan has also been developed for the squid and finfish trawl fisheries. There are currently insufficient data to conduct an assessment of the large *Illex argentinus* jigging fleet, so an Assessment Directive has been drafted to collect the data necessary to conduct an assessment (as detailed in IPOA-Seabirds) within four years of the adoption of the plans.

(v) South Africa distributed a draft NPOA in November 2002. The Working Group requested information on learning when the NPOA may be finalised.

(vi) Apart from the reports from New Zealand and Australia (WG-FSA-03/41 and 03/51), the CCAMLR Secretariat received no other updates on NPOA development.

6.175 The Scientific Committee had noted slow progress to develop and implement NPOAs (SC-CAMLR-XXI, paragraph 5.35). The Working Group continued to highlight the need for nations and fishing entities to develop effective NPOAs for fisheries that interact with seabirds from the Convention Area.

6.176 The Working Group was encouraged to learn that FAO will jointly host with BirdLife International a South American workshop on the conservation of albatrosses and petrels in Chile in December 2003. Invited participants will include government, fishing industry, and environmental organisation representatives from Argentina, Chile, Peru, Ecuador and Uruguay. The Working Group is hopeful that this effort by FAO and BirdLife International will hasten the development and implementation of NPOAs in key areas and improve the progress seen to date in completed and effective NPOAs. It encouraged the convening of similar workshops in other key areas and for distant water fleets.

RFMOs, Tuna Commissions and International Governmental Organisations

6.177 The Working Group recollected its earlier advice, endorsed by the Commission, that 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 longline fishing inside the Convention Area and with longline fishing for species other than *Dissostichus* in areas adjacent to the Convention Area (CCAMLR-XX, paragraph 6.33). CCAMLR has been making particular efforts to collaborate with relevant RFMOs to address these problems, but with limited success in 2002.

6.178 The situation from last year has not improved, when the Commission noted that intersessional contact with RFMOs with competences in areas adjacent to the Convention Area regarding the issue of incidental mortality of seabirds had been limited and unsatisfactory (CCAMLR-XXI, paragraph 6.16). It requested that Members, who are also

members of other RFMOs, ensure that the issue of seabird by-catch is included on the agendas of appropriate meetings of all relevant RFMOs (SC-CAMLR-XXI, paragraphs 5.30 to 5.34).

6.179 The CCAMLR Observer to CCSBT (Australia) provided a report from the November 2001 meeting of CCSBT-ERSWG (SC-CAMLR-XXII/BG/21). The Working Group noted that CCSBT has required the mandatory use of one streamer line on member country vessels targeting southern bluefin tuna. Aside from this, it appears that minimal activities have occurred to develop a comprehensive seabird by-catch reduction program.

6.180 In the ERSWG report, Japan noted the comments made at CCAMLR in regard to the incomplete coverage and lack of clarity of its NPOA and reported that the comments would be considered by its NPOA review committee. Japan indicated that it would report to CCAMLR on the outcome. The CCAMLR Secretariat has not yet received such comments from Japan.

6.181 The Working Group was encouraged that ICCAT adopted a Resolution on Incidental Mortality of Seabirds (Res. 02-14) at its 2002 annual meeting. The resolution urges Parties to inform ICCAT's Standing Committee on Research and Statistics (SCRS) of the status of their NPOA-Seabirds and to implement such plans, where appropriate. Furthermore, the resolution encourages Parties to collect and provide to SCRS all available information on interactions with seabirds, including incidental catches in all fisheries under the purview of ICCAT.

6.182 Ms Rivera reported that the USA has included seabird by-catch information from its Atlantic pelagic longline fishery in its national report to ICCAT this year as well as the information requested on its NPOA-Seabirds implementation.

6.183 The Working Group encouraged other CCAMLR Members that are also members of ICCAT to comply similarly with ICCAT's Resolution 02-14. The Working Group noted with concern that the final version of Resolution 02-14 did not specify any time frame for the execution of the tasks.

6.184 As a result of an examination last year of fisheries data provided by IOTC, the Working Group noted that pelagic longline effort by Japan and Taiwan in the Indian Ocean south of 40°S overlaps with the foraging distribution of several albatross species that breed in the Convention Area (SC-CAMLR-XXI, Annex 5, paragraph 6.146).

6.185 Thus, the CCAMLR Secretariat sent a request in November 2002, via the IOTC Secretariat, to delegations at the annual IOTC meeting who represented countries which are also CCAMLR Members. The request was to ensure that the issue of seabird by-catch be included for consideration by IOTC. No response to this has been received to date.

6.186 Dr Kirkwood noted that the Scientific Committee of IOTC had recently established a working party to assess by-catch of non-target species. However, its main initial focus would be on shark by-catch in tropical longline fisheries, from which interactions with seabirds had not been reported.

6.187 The Working Group welcomed this information, but noted that it would appreciate the opportunity for seabird by-catch experts contributing to its work to assess interactions

between seabirds potentially originating from the Convention Area and longline fisheries (especially for swordfish and albacore) in the southern part of the IOTC area and to propose any mitigation measures that might be deemed appropriate.

6.188 IATTC has measures in place calling for the reduction of non-target catches which are not landed. IATTC indicated last year that its purse-seine fishery observer program has never documented seabird by-catch and that its longline fishery has no observer program (SC-CAMLR-XXI, Annex 5, paragraphs 6.147 and 6.148).

6.189 For a second year, the USA has provided seabird by-catch information from its west coast pelagic longline fishery for tuna and swordfish, a fishery that occurs within the IATTC Convention Area (SC-CAMLR-XXI, Annex 5, paragraph 6.148; WG-FSA-03/39). Information from both years indicated that the seabird species incidentally caught in this pelagic longline fishery are not species that breed in the CCAMLR Convention Area. The Working Group appreciated this information and requested that, in the future, if fishery changes occur and the observer program documents by-catch of seabirds from the CCAMLR Convention Area, that such information be provided to WG-IMAF.

6.190 Mr Smith informed the Working Group that the recent Chairman's report from the 5th Preparatory Conference for the Establishment of the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific (WCPFC) (available at www.ocean-affairs.com) stated that the Convention is highly likely to enter into force by the middle of 2004. The Working Group suggested that CCAMLR could provide an assessment of the potential risk to CCAMLR Convention Area seabirds by vessels fishing in the WCPFC area.

6.191 The Working Group noted that following its recommendation to the Scientific Committee last year, the Commission requested Members who are also members of and observers to relevant RFMOs to: (i) ensure that the issue of seabird by-catch is included on the agendas of appropriate meetings of all relevant RFMOs; (ii) continue reporting on activities relating to seabird by-catch; and (iii) press for inclusion of this topic on RFMO agendas (CCAMLR-XXI, paragraph 6.16; SC-CAMLR-XXI, paragraphs 5.30 to 5.34; SC-CAMLR-XXI, Annex 5, paragraph 6.154). The Working Group noted that CCAMLR has nominated observers to participate intersessionally at the meetings of ICCAT, IATTC and CCSBT. A reminder was also sent by the Secretariat, via the IOTC Secretariat, to delegations of those CCAMLR Members who are also members of IOTC. By the time of WG-FSA, no reports from CCAMLR observers at these meetings had been made available. The Working Group recommended that further actions on cooperation with RFMOs be developed by the Scientific Committee after considering reports from CCAMLR observers.

6.192 The Working Group was disappointed to learn that a joint Chile/USA seabird by-catch proposal submitted to the APEC Fisheries Working Group in 2003 was not approved. It appears that due to lack of available APEC funds, the proposal was not forwarded for consideration. The Working Group commended the proposers on their collaborative and cooperative efforts and encouraged renewed attempts to seek support for this seabird by-catch initiative.

Other International Organisations and Initiatives,
including Non-governmental Organisations

6.193 The formation of Southern Seabird Solutions was first reported to the Working Group last year (SC-CAMLR-XXI, Annex 5, paragraph 6.156). A status report on Southern Seabird Solutions was received (WG-FSA-03/31) detailing some of its activities, such as: fostering exchange of crew and technologies between fleets in different countries; hosting national and regional fishers forums to enable fishers from different fleets to exchange ideas and information; developing and testing new mitigation technologies; establishing similar groups to Southern Seabird Solutions in other countries; and producing various outreach materials to build awareness of the issue and solutions.

6.194 Southern Seabird Solutions is holding its annual conference in Auckland, New Zealand, in November 2003. The Working Group again commended the work of Southern Seabird Solutions as it recognises the value of this group in aiding the reduction of seabird by-catch of birds breeding in the Convention Area. The Working Group encouraged active participation in Southern Seabird Solutions by CCAMLR Members.

6.195 Prof. Croxall reported that the BirdLife International Seabird Conservation Programme has several ongoing activities of note that relate to albatrosses and petrels that breed in the Convention Area:

(i) a seabird mitigation guide available (in Spanish) for fishers using the Spanish longline system;

(ii) a fishers' competition with substantial prize money for the best seabird avoidance device;

(iii) co-hosting with FAO a technical workshop for South America in Chile in December 2003;

(iv) hosting with Asian partners a technical workshop for Asian nations, particularly distant water fleets, in Taiwan in January 2004;

(v) comprehensive activity reports from BirdLife International partners in the USA (National Audubon Society) and Spain (SEO/BirdLife).

6.196 The Working Group commended BirdLife International for these numerous activities and is encouraged by continued work to address the critical areas of South American fisheries and the distant-water fleets of Asian nations, both of which relate to the foraging distributions of albatrosses and petrels breeding in the Convention Area.

6.197 The Third International Conference on Albatrosses and Petrels will be held in Montevideo, Uruguay, from 23 to 27 August 2004. The Working Group encouraged the active participation of CCAMLR Members in this important meeting which will directly address the conservation of albatross and petrel species breeding in the Convention Area. Information on the conference is available at www.iapc2004.com.

National Initiatives

6.198 The USA reported on a seabird identification guide that is used by observers in its Alaskan groundfish fisheries to accurately identify the seabird species that are incidentally caught in fishing gear (WG-FSA-03/24). The guide is comprised of photo accounts of dead birds and uses a simple identification scheme.

6.199 The Working Group reviewed this approach to seabird identification by fishery observers. Features of this guide are worth future consideration if the Commission decides to revise its own 'live bird' guide for species occurring in the Convention Area. In the interim, the Working Group encouraged CCAMLR Members to work with its observer programs to acquire the imagery that could be used in such training tools.

Incidental Mortality of Seabirds in relation to New and Exploratory Fisheries

Assessment of Risk in CCAMLR Subareas and Divisions

6.200 As in previous years, the Working Group assessed the numerous proposals for new fisheries and the potential for these new and exploratory fisheries to lead to substantial increases in seabird incidental mortality.

6.201 In order to address these concerns, the Working Group reviewed its assessments for relevant subareas and divisions of the Convention Area in relation to:

(i) timing of fishing seasons
(ii) need to restrict fishing to night time
(iii) magnitude of general potential risk of by-catch of albatrosses and petrels.

6.202 Comprehensive assessments on the potential risk of interaction between seabirds and longline fisheries for all statistical areas in the Convention Area are carried out each year and have been combined into a background document for use by the Scientific Committee and Commission last year (this was SC-CAMLR-XXI/BG/21).

6.203 This year new data on at-sea distribution of light-mantled albatross from satellite-tracking studies was provided in WG-FSA-03/52. This information was used to update the assessment of potential risk of interaction between seabirds and longline fisheries for Division 58.4.1. Also incorporated were minor changes to correct errors and inconsistencies identified during the review of the assessments, and to clarify the Working Group's advice last year with respect to high-latitude subareas and divisions in the Convention Area where exemptions from seasonal restrictions may apply subject to the application of conservation measures similar to Conservation Measure 24-02. The revised assessments incorporating new information made available at the meeting (with changes/additions underlined) have been issued as SC-CAMLR-XXII/BG/17.

New and Exploratory Longline Fisheries Operational in 2002/03

6.204 Of the 21 proposals last year for new and exploratory longline fisheries in 10 subareas and divisions, only five were actually undertaken: by Australia in Division 58.4.2; by New Zealand, Russia and South Africa in Subarea 88.1; and by New Zealand in Subarea 88.2.

6.205 No seabird by-catch was reported to have been observed in any of these fisheries. Clearly the strict adherence in Subareas 88.1 and 88.2 and Division 58.4.2 to the specific requirements set out in Conservation Measure 24-02 with respect to line-weighting regimes, combined with fishing in an area of average-to-low and average risk, has proven successful in achieving zero incidental by-catch of seabirds.

New and Exploratory Longline Fisheries Proposed for 2003/04

6.206 Twenty-nine applications for new and exploratory longline fisheries, submitted by 14 countries, were received by CCAMLR in 2003. The areas for which these proposals were received were:

Subarea 48.1	Argentina
Subarea 48.2	Argentina
Subarea 48.3	Namibia
Subarea 48.6	Argentina, Japan, Namibia, New Zealand, South Africa, Spain
Division 58.4.1	Argentina, Australia, Namibia, USA
Division 58.4.2	Argentina, Australia, Namibia, Russia, Ukraine, USA
Division 58.4.3a	Argentina, Australia, Namibia, Russia, Ukraine, USA
Division 58.4.3b	Argentina, Australia, Namibia, Russia, Ukraine, USA
Division 58.4.4	Argentina, Namibia
Division 58.5.1	Argentina, Namibia
Division 58.5.2	Argentina, Namibia, USA
Subarea 58.6	Argentina, South Africa
Subarea 58.7	Argentina, Namibia
Subarea 88.1	Argentina, Japan, Republic of Korea, Namibia, New Zealand, Norway, Russia, South Africa, Spain, UK, Ukraine, Uruguay, USA
Subarea 88.2	Argentina, Republic of Korea, Namibia, New Zealand, Norway, Russia, South Africa, Ukraine
Subarea 88.3	Argentina.

6.207 All the areas listed above were assessed in relation to the risk of seabird incidental mortality according to the approach and criteria set out in SC-CAMLR-XXII/BG/17. A summary of risk level, risk assessment, IMAF recommendations relating to fishing season and any inconsistencies between these and the proposals for new and exploratory longline fisheries in 2003, is set out in Table 6.9. The only changes to advice in relation to levels of risk of seabird by-catch for any part of the Convention Area were for Division 58.4.1 (from level 3 to level 2) and Division 58.4.2 (from level 2 to level 3).

The only obvious inconsistencies needing resolution (highlighted in Table 6.9) are:

- All Namibian proposals contain inconsistencies with respect to their stated intentions to comply with recommended seabird by-catch mitigation measures, particularly compliance with Conservation Measure 25-02, and in respect of fishing seasons.

- The Korean proposals for Subareas 88.1 and 88.2 contain insufficient detail to assess the intended level of compliance with seabird by-catch mitigation measures.

- The Norwegian proposal indicates intention to use only one observer in Subareas 88.1 and 88.2, inconsistent with the provisions of Conservation Measures 41-09 and 41-10.

- The need for confirmation by Ukraine that its proposal for Divisions 58.4.3a and 58.4.3b is to fish in a season from 1 to 30 May 2004. This confirmation was received during the WG-FSA meeting.

- The Argentinian proposal for Division 58.5.1 and Subareas 58.6 and 58.7 indicates intention to fish outside the recommended fishing season for these statistical areas.

- If Working Group advice is followed, Conservation Measure 24-02 will need to be amended to permit exemptions from the requirement to set longlines at night, 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, 58.4.3a and 58.4.3b.

6.208 In previous years, fishing proposals in exploratory fisheries in Subareas 48.6 (south of 60°S), 88.1 and 88.2 and Division 58.4.2 have obtained an exemption from the requirement of Conservation Measure 29/XIX (25-02) to set longlines at night. These areas had been assessed by the Working Group as having an average to low risk (risk levels 1, 2 or 3) of seabird incidental mortality. Exemptions were given providing that vessels complied fully with measures specified in Conservation Measure 24-02, designed to ensure that a line sink rate of at least 0.3 m/s was achieved during daytime fishing operations.

6.209 To date all vessels fishing in exploratory fisheries in these areas have achieved this sink rate and have experienced zero seabird mortalities. The Working Group believed that this result could be attributed largely to strict adherence to this requirement, although there is a need to exercise caution in this interpretation because seabird abundance and risk of incidental mortality is average-to-low (risk level 2) in the higher latitudes of Subareas 88.1 and 88.2.

6.210 Last year the Working Group indicated that this proven protocol could be extended to other vessels fishing experimentally in similar average- to low-risk areas (risk levels 1, 2 or 3) within the Convention Area (SC-CAMLR-XXI, Annex 5, paragraph 6.173). However, the Working Group advised that to extend this requirement to higher-risk areas, such as Subarea 58.6, would be premature.

6.211 Setting of longlines within the Convention Area during daylight hours using currently approved fishing gear still represents a risk for seabirds, even in areas of average risk. In all instances where the provisions of Conservation Measure 24-02 are applied, there remains the need for continued review of performance with respect to incidental mortality of seabirds

during fishing operations. The Working Group recommended that any vessel operating under the provisions of this conservation measure, and which catches a total of three (3) seabirds shall revert to night setting in accordance with Conservation Measure 25-02. Similar provisions were specified for the 2002/03 season in Conservation Measures 41-04, 41-05, 41-09 and 41-10.

6.212 With respect to the prescription of a seabird by-catch level, the Working Group noted that there is still no definition of the status of birds 'caught' (SC-CAMLR-XXI, paragraph 5.39(iii) and Annex 5, paragraph 6.176).

6.213 The Working Group recalled that last year it had noted that it was necessary to define precisely what is meant by the number of birds caught and to take account of this in any review of the seabird by-catch limit. To do this it was necessary to make appropriate provision in the *Scientific Observers Manual* logbook data recording and reporting forms, and instructions to scientific observers, for distinguishing birds landed alive but with potentially fatal injuries from those released alive with no or minor injury (SC-CAMLR-XXI, Annex 5, paragraphs 6.207 and 10.22 to 10.23; SC-CAMLR-XXI, paragraph 5.45(iii)).

6.214 This year the Working Group proposed a working definition of birds caught such that any bird 'caught' by the fishery should be recorded in one of the following three categories:

1. Dead not landed on board – those birds observed to be killed by direct interaction with fishing gear but not landed on the fishing vessel.

2. Dead landed on board – those birds landed on the vessel that are dead (i.e. show no muscle movement or corneal reflex).

3. Alive landed on board –
   (a) injured
   (b) released uninjured.

6.215 For those birds in the third category (alive landed on board) a bird should be recorded as injured (3a) if it has any of the following pathologies: fracture of a wing bone, a leg bone or beak, more than two primary feathers on either wing that have broken feather shafts, substantial damage to the patagial tendon (indicated by a drooping wing or the inability to fly upon release), an open wound (other than superficial injuries in which there is no subcutaneous muscle damage), waterlogged or hydrocarbon soiled plumage, or any bird released with a hook in situ.

6.216 The Working Group recognised that whilst it may be possible to release some injured birds, the long-term survival of these individuals is likely to be substantially reduced. Therefore, birds in category 3a should be considered as being dead.

6.217 In the assessment of seabird by-catch, the number of birds caught by a fishery should be defined as the sum of categories 1, 2, and 3a.

6.218 It was noted that the level of observation necessary for monitoring seabird by-catch may need further review. The Working Group reiterated its advice that higher levels of observer coverage may be necessary in some circumstances (SC-CAMLR-XXI, Annex 5, paragraph 6.178).

Other Incidental Mortality

Interactions involving Marine Mammals with Longline Fishing Operations

6.219 One southern elephant seal was reported to have drowned after becoming entangled in the mainline of the *In Sung No. 66* fishing in Subarea 48.3. The observer was informed of this but did not witness the event (WG-FSA-03/63 Rev. 1). Three southern elephant seals were entangled and drowned in the mainline of the *Janas* while fishing in Division 58.5.2 (WG-FSA-03/63 Rev. 1).

6.220 In relation to interactions between cetaceans and longline fishing, especially involving loss of fish or interruption to fishing activities (see SC-CAMLR-XXI, Annex 5, paragraph 6.180), WG-FSA-03/27 summarised data from longliners in Subarea 48.3 between 2000 and 2002. This indicated that sperm whales were recorded during 24% of hauling operations and killer whales, the second most abundant cetacean species, were recorded during 5% of hauls. Catch rates were significantly lower when killer whales were present (0.15 kg/hook; 21.5 fish/thousand hooks), when compared to hauls with no cetaceans present (0.29 kg/hook; 48.5 fish/thousand hooks). The same trend was, however, not observed for catch rates when sperm whales were present during hauling (0.32 kg/hook; 51.9 fish/thousand hooks). Sperm whales were likely attracted to areas with high catch rates, but in areas with lower catch rates indications are that depredation by sperm whales can lead to a drop-off in catches. The authors suggested that further investigations are needed to determine the extent of longline–cetacean interactions, to address the problems of longline–cetacean depredation, to standardise observer protocols to ensure the collection of valuable data, and to assess and implement mitigation strategies under controlled experimental conditions.

6.221 WG-FSA-03/95 used observer data from Chilean waters adjacent to the Convention Area to quantify the level of sperm and killer whale interactions with demersal longliners. Based on the frequency of toothfish lips and heads hauled, the authors estimated that around 3% of toothfish are taken from the line by sperm and killer whales. The authors also suggested that sperm whales that congregate around toothfish longliners may be susceptible to an increased level of attack by killer whales, although the magnitude of this problem has not been quantified.

6.222 Dr Micol reported that the documented decline in the number of killer whales in Subarea 58.6 was considered, at least in part, to be a result of the use of firearms and explosive deterrents by IUU longline vessels.

6.223 Scientific observers in Subarea 48.3 reported that both Antarctic fur seals and leopard seals were observed removing toothfish from lines at the surface, including a single leopard seal that had a longline hook in its lip.

Interactions involving Marine Mammals and Seabirds with Trawl and Pot Fishing Operations

Pot Fishing

6.224 There were no reports of pot fishing within the Convention Area in 2003.

Krill Trawl Fishing

6.225 The level of observer coverage achieved on krill trawlers in Subarea 48.3 was 66%, however, all scientific observers were still at sea at the time of the meeting, and therefore no cruise reports were available to the Working Group for consideration.

6.226 It was noted that in its Report of Members' Activities (posted on the CCAMLR website) Poland indicated that in the krill fishery in Area 48, between 13 March and 26 August 2003, 73 Antarctic fur seals were caught by the Polish vessel *Acamar*, of which 26 were killed and 47 released alive.

6.227 The Working Group noted that this level of Antarctic fur seal mortality associated with krill fishing was considerably higher than any previous report.

6.228 In the absence of reports from scientific observers, the Working Group was unable to investigate the circumstances further. It noted that reports from UK scientific observers on vessels from Japan, Republic of Korea, Ukraine and the USA would be available for consideration at its next meeting.

6.229 The Report of Members' Activities by Japan indicated that in the krill fishery in Area 48 in 2003 a total of nine seals had been caught and released alive.

6.230 The Working Group suggested that vessel operators and researchers with relevant experience should collaborate in the development and implementation of methods either to exclude seals from nets or to release captured seals in a manner that minimises handling and injury. Details of any devices used to release fur seals by vessels fishing for krill would be particularly relevant. Experience from analogous fisheries in Australia and New Zealand might also be useful.

6.231 The Working Group noted that it would be valuable to be able to consider data on incidental mortality associated with krill fishing during the WG-FSA meeting, where experts in by-catch mitigation are present. It requested the Scientific Committee to address how best to arrange appropriate reporting from the krill fishery to facilitate this.

Finfish Trawl Fishing

6.232 Based on data from scientific observer logbooks and cruise reports from the trawl fishery in Division 58.5.2, a total of 15 incidents of seabird entanglement was recorded, of which six (2 white-chinned petrels, 2 black-browed albatrosses and 2 Cape petrels) were fatal (WG-FSA-03/64 Rev. 1). Full details of vessel-specific seabird by-catch over the last five years are provided in Table 6.10.

6.233 Based on data from scientific observer logbooks and cruise reports from the *C. gunnari* trawl fishery in Subarea 48.3, a total of 43 incidents of seabird entanglement was recorded. Of these, 36 were fatal and seven resulted in birds being released alive, although two birds released alive had sustained major injuries. The bird mortalities consisted of white-chinned petrels (78%), black-browed albatrosses (19%) and grey-headed albatrosses (3%). In addition, a single black-browed albatross mortality was recorded after the bird collided with a trawl warp cable during daylight hours (WG-FSA-03/64 Rev. 1).

6.234 The Working Group noted that the number of seabirds killed in this fishery has reduced from 93 in 2001 (SC-CAMLR-XX, Annex 5, paragraph 8.5) to 73 in 2002 (SC-CAMLR-XXI, Annex 5, paragraph 6.188) to 36 in 2003, which might suggest that mitigation measures are resulting in some reduction in mortality.

6.235 However, it was noted that when the seabird mortality is expressed in terms of relevant fishing effort (e.g. number of hauls), the by-catch rates (birds per haul) are 0.25 (2001), 0.15 (2002) and 0.20 (2003), providing limited evidence of any reduction in seabird by-catch rate.

6.236 The Working Group noted that while the level of seabird mortality in the *C. gunnari* trawl fishery in Subarea 48.3 in 2003 has reduced by 58% since 2001, the level of seabird mortality in this fishery is still substantially greater than that in the regulated longline fishery in the same subarea.

6.237 Last year it was indicated that seabird mortality in the *C. gunnari* trawl fishery in Subarea 48.3 arose as birds dived into and became entangled in the large mesh in the wings of the net during shooting and hauling (SC-CAMLR-XXI, Annex 5, paragraph 6.198). In order to better understand the process by which the birds become entangled, a typical sequence of activities and the state of the trawl is provided in SC-CAMLR-XXII/BG/28 (previously WG-FSA-03/79 Appendix 1). However, it should be noted that there may be differences in gear characteristics and operation between vessels participating in this fishery.

6.238 This year no vessel reached the precautionary by-catch limit of 20 birds adopted in 2002 and retained in 2003 (Conservation Measure 42-01, paragraph 8), although both the *Betanzos* and *Sil* approached the level, with 16 recorded mortalities each. In the case of the *Sil*, 15 of these occurred in a single shot. This occurred when, with the net partially in the water, shooting was interrupted for several minutes to change the batteries on the acoustic net sounder. The Working Group emphasised the importance of conducting all maintenance measures with the net on board and making all practicable efforts to reduce the time that the net is on or near the sea surface during shooting and hauling.

6.239 WG-FSA-03/79 provided an analysis of by-catch data and the efficacy of the mitigation measures used to reduce net entanglements in the *C. gunnari* trawl fishery in Subarea 48.3 in 2002/03. It reported 32 seabird entanglements during hauling and 18 during shooting, that significantly more entanglements were recorded during daytime than night-time, but that no significant difference was identified between daytime and night-time hauls. Most birds were caught in meshes of diameter 160–200 mm. Although the analysis failed to identify mitigation measures that significantly reduced mortality, several methods appeared to be effective, including use of streamer lines, offal discharge practice and gear operating procedures.

6.240 The Working Group considered that the use of streamer lines during hauling, removing fish from the net while the net remains on the deck prior to shooting (i.e. net cleaning) and the addition of weights attached to the codend to increase the sink rate and reduce the time that nets remain on or close to the sea surface, warrant further experimental development.

6.241 The use of bottom trawls is currently prohibited in Subarea 48.3 (Conservation Measure 42-01). Last year the Working Group indicated that the use of bottom trawl gear, fished off the bottom (i.e. adapted to do so), might be permitted under appropriate conditions (SC-CAMLR-XXI, Annex 5, paragraph 6.202).

6.242 Dr Agnew informed the Working Group that vessel operators involved in the fishery have enquired about the potential for vessels to use demersal trawling gear during daylight hours, reverting to pelagic gear for operations conducted in darkness. It has been suggested by operators that this may reduce seabird by-catch as the demersal gear is heavier, has a smaller mesh at the mouth and is present at the surface for a much shorter period of time than the pelagic/midwater trawl gear.

6.243 The Working Group considered that this recommendation should be assessed in relation to potential damage that may be caused to benthic communities by heavy demersal gear set on the seabed and also to possibly higher levels of by-catch of non-target fish species. Without the implementation of factory discharge management prescriptions this might lead to increased levels of discards and offal discharge and alter seabird interactions with fishing gear, particularly trawl warp cables (see paragraph 6.249).

6.244 The Working Group agreed that in order to take account of the new information on potential mitigation measures obtained from scientific observers in this fishery in 2002/03, modification should be made to Conservation Measure 25-03 (see paragraph 6.252).

6.245 The Working Group noted that fishers in the *C. gunnari* trawl fishery in Subarea 48.3 were currently experimenting with several innovative mitigation measures and should be encouraged to continue this practice; the level and detail of reporting in observer reports should also be maintained.

6.246 The Working Group recalled that as the existing interim seabird by-catch limit was on a per-vessel basis, and there was no limit on the number of vessels operating in this fishery, there existed the potential for a substantial increase in seabird by-catch.

6.247 The seabird by-catch limit agreed by the Commission in 2001 of 20 birds per vessel was intended as an interim measure in this fishery (CCAMLR-XX, paragraph 6.39). The Working Group suggested that the interim per-vessel seabird by-catch limit might be reviewed given the lack of substantial reduction in the catch rate of birds as a result of mitigation measures put in place in the fishery in 2002 and 2003.

6.248 WG-FSA-03/92 presented data on seabird mortality in the demersal finfish trawl fishery in the waters around the Falkland/Malvinas Islands in 2002/03, when 1 529 (CV 0.15) seabirds (1 411 black-browed albatrosses and 98 southern giant petrels) were killed in the fishery. The Working Group noted that this mortality estimate is considered conservative as it was based solely on birds or parts of birds that were hauled aboard and did not account for birds dislodged from the cable prior to or during hauling.

6.249 WG-FSA-03/92 highlighted the causes of the contrasting nature of seabird by-catch in demersal trawl fisheries. The demersal fishery in the Falkland/Malvinas Islands produces a higher level of factory discharge, attracting a greater density of birds to the vessel over a longer period of time, compared to the pelagic *C. gunnari* fishery in Subarea 48.3, in which the target species is processed whole and vessels produce relatively little discharge.

6.250 The Working Group agreed that, given the scale of the problem in the waters around the Falkland/Malvinas Islands and the size of the factory trawling fleets in the adjacent waters of Chile and Argentina, this cause of mortality may represent a significant threat to seabirds generally and also to those species from the Convention Area that forage seasonally in these regions.

Revision of Conservation Measure 25-03

6.251 The Working Group reviewed the current provisions of Conservation Measure 25-03 in the light of the new information available (paragraphs 6.237 to 6.244).

6.252 The following additions (new paragraphs) to the conservation measure were proposed:

(i) New paragraph 4. Nets should be cleaned prior to shooting to remove items that might attract birds.

(ii) New paragraph 5. Vessels should adopt shooting and hauling procedures that minimise the time that the net is lying on the surface of the water with the meshes slack. Net maintenance should, to the extent possible, not be carried out with the net in the water.

(iii) New paragraph 6. Vessels should be encouraged to develop gear configurations that will minimise the chance of birds encountering the parts of the net to which they are most vulnerable. This could include increasing the weighting or decreasing the buoyancy of the net so that it sinks faster, or placing coloured streamers or other devices over particular areas of the net where the mesh sizes create a particular danger to birds.

Other Business

Revision of *Fish the Sea Not the Sky*

6.253 The Secretariat advised the Working Group that it continues to receive periodical requests for copies of the booklet *Fish the Sea Not the Sky*. A number of copies are still available in French, Russian and Spanish, but not in English.

6.254 The Working Group noted that it had recommended a number of changes to mitigation measures which would require revision of Conservation Measure 25-02 on which the booklet is based. Therefore, the booklet would require revision should it be published again. Production of the revised booklet in all official languages of CCAMLR would require substantial funds.

6.255 The Working Group also noted the existence of a range of educational material recently published by other international and national organisations on the reduction of seabird by-catch. It therefore decided that rather than revise *Fish the Sea Not the Sky*, alternative means of publicising CCAMLR measures should be investigated (e.g. video,

posters, flyers). Consequently, the Working Group requested the Secretariat to estimate indicative costs for the production of a poster and flyer and report this to the Scientific Committee.

Advice to the Scientific Committee

General

6.256 The plan of intersessional work (Appendix E) summarises requests to Members and others for information of relevance to the work of the Working Group (paragraphs 6.1 to 6.3). Members are particularly invited to review the membership of the Working Group, to suggest additional members and to facilitate attendance of their representatives at meetings (paragraph 6.4).

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

6.257 (i) For Subarea 48.3 the total estimated seabird by-catch in 2003 was only eight birds at a rate of 0.0003 birds/thousand hooks, even lower than the values of the last three years (paragraphs 6.8 and 6.9).

(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 (paragraphs 6.10 and 6.11). The causes of this marked improvement are unknown, although fishing effort was still reduced (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 (paragraphs 6.12 to 6.14), presumably due to strict compliance with conservation measures.

(iv) These totals represent the lowest estimated seabird by-catch in regulated longline fisheries yet reported for these parts of the Convention Area; thanks were proposed to all responsible (paragraph 6.15).

6.258 (i) No data from longline fishing in French EEZs in Subarea 58.6 and Division 58.5.1 had been received for 2003, nor, as requested last year, for 2002 (paragraphs 6.16 to 6.18). However, it was reported that France continued to have problems with the by-catch of seabirds, chiefly white-chinned petrels, in the fisheries within its EEZs in the Convention Area. Between September 2001 and August 2002, 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. In the fishing year commencing September 2002, 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 (paragraph 6.19).

(ii) Current attempts by France to address this problem were summarised (paragraph 6.20), together with comments by the Working Group (paragraph 6.21).

6.259 Rates and levels of seabird by-catch in the French EEZs represent a very serious situation, likely unsustainable for the major populations being affected (paragraph 6.22). It is recommended that:

(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 (paragraph 6.24);

(ii) longline fisheries in the French EEZs be managed in strict compliance with Conservation Measure 25-02, together with additional mitigation, as specified in 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 of existing methods successful in New Zealand at mitigating against by-catch of white-chinned petrels are conducted in the area (paragraph 6.31);

(iv) exchange of fishers takes place between New Zealand and France (paragraph 6.32);

(v) despite strong support for these measures, the Working Group reiterated earlier advice that closing the longline fishery in these areas from September to April inclusive would represent the most effective means of by-catch reduction (paragraph 6.33).

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

6.260 Reported compliance with these conservation measures this year, compared to last year, was substantially improved in all subareas and divisions and was again complete in Subareas 88.1 and 88.2:

(i) Streamer lines – compliance with streamer line design was 92% compared with 86% and 66% in the last two years (paragraph 6.35). In Subareas 58.6, 58.7, 88.1 and 88.2, all vessels used streamer lines on all sets; in Subarea 48.3, 16 of 19 vessels did so (paragraph 6.36).

(ii) Offal discharge – all vessels except *South Princess* (Subareas 58.6 and 58.7) complied with the requirement either to hold offal on board, or to discharge on the opposite side to where the line was hauled. Only one vessel (*South Princess*) was observed to discharge offal during setting (paragraph 6.37).

(iii) Night setting – in Subarea 48.3 compliance was 98%, compared to 99% and 95% in the last two seasons; in Subareas 58.6 and 58.7 it was 98%, compared with 78% and 99% in the last two years (paragraph 6.40).

(iv) Line weighting (Spanish system) – in Subarea 48.3 appropriate weighting was used in 100% of cruises compared with 63% and 66% in the last two years (paragraph 6.42); in Subareas 58.6 and 58.7 the only vessel using this method (*Koryo Maru No. 11*) failed to comply (paragraph 6.43).

(v) Line weighting (autoline system) – the requirement to achieve a line sink rate of 0.3 m/s when fishing in daylight in Subareas 88.1, 88.2 (south of 65°S) and Division 58.4.2 was met by all vessels (paragraph 6.44).

6.261 In relation to overall compliance with Conservation Measure 25-02, 14 of the 29 vessels (48%), including eight of 19 in Subarea 48.3, fully complied with all measures at all times throughout the Convention Area (paragraph 6.45, Table 6.7). This compares with 3 of 21 vessels last year (14%). A group of vessels failed to fully comply by small margins (Table 6.7) and it was re-emphasised that the specifications in the conservation measure are minimum standards and that vessels should be advised to exceed these minimum standards to prevent compliance failure (paragraph 6.45).

6.262 In respect of reports relating to compliance with Conservation Measure 25-03, records of offal discharge (paragraphs 6.38 and 6.57) and possible misinterpretation relating to cables associated with monitoring devices (paragraphs 6.55 and 6.56) were noted.

6.263 A response to proposals to SCIC for a new system of assessing compliance of fishing vessels with conservation measures is provided in paragraphs 6.58 to 6.65.

Fishing Seasons

6.264 On the basis of the data for the 20002/03 fishing season in Subarea 48.3, seabird by-catch levels were very low (negligible in terms of the population dynamics of the species concerned), for the fourth successive season. Full compliance with Conservation Measure 25-02 was achieved by eight vessels in Subarea 48.3 (Table 6.7). A review of advice and decisions relating to fishing seasons for Subarea 48.3 last year, and revised advice for the current year (that any extension to the fishing season in 2003/04 should occur only in September, and only for vessels in full compliance in 2002/03) is provided in paragraphs 6.47 to 6.54.

Research into and Experiences with Longline Mitigating Measures

6.265 An extensive review of current initiatives, especially in relation to practices in the Convention Area and to the specification of Conservation Measure 25-02, is provided in paragraphs 6.66 to 6.108. Of particular note are:

(i) the successful outcome of trials of IW longlines, whereby in New Zealand waters by-catch on IW lines and control lines were 1 and 81 white-chinned petrels respectively (paragraph 6.75);

(ii) strong support for a trial 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 (paragraphs 6.86 to 6.89);

(iii) that trials on Spanish system longlines demonstrated that the weighting regime of 8.5 kg at 40 m specified in Conservation Measure 25-02 produced line sink rates of about 0.5 m/s (paragraph 6.76);

(iv) a comprehensive review of streamer line design and operation (paragraphs 6.83 to 6.85).

6.266 Taking account of all the information and data presented, a revision of Conservation Measure 25-02 is proposed, the rationale for which is described in paragraphs 6.92 to 6.108; a draft revised conservation measure is attached as Appendix F.

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

6.267 (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 (paragraphs 6.112 to 6.114; full details are in SC-CAMLR-XXII/BG/19); estimated median and 95% confidence interval values for seabird by-catch associated with IUU fishing are summarised in paragraph 6.115.

(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) Results for the current and previous years are summarised in Table 6.8, values being about one half of those derived from using the previous method (paragraph 6.123). However, 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. A review of seabird by-catch rates used to characterise IUU longline fisheries was requested (paragraphs 6.123 and 6.124).

(iv) Advice was requested on some issues relating to the presentation and interpretation of these results (paragraph 6.120).

(v) 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 (paragraph 6.119). Since 1996, an estimated potential total of 187 155 (range 152 381–546 567) seabirds, comprising 41 897 (range 33 904–132 011) albatrosses, 7 417 (range 6 059–20 742) giant petrels and 116 130 (range 95 728–335 932) white-chinned petrels, have been killed in IUU longline fisheries in the Convention Area (paragraph 6.122). A subdivision of these totals by area is provided in Table 6.8.

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

(vii) The Commission should continue to take stringent measures to combat IUU fishing in the Convention Area (paragraph 6.127).

Incidental Mortality of Seabirds during Longline Fishing outside the Convention Area

6.268 No new data were reported this year; Members were asked to respond next year to this standing request for information on Convention Area seabirds killed in nearby areas.

Research into the Status and Distribution of Seabirds at Risk

6.269 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 (paragraphs 6.133 to 6.137).

6.270 Such new data as were provided this year (notably in paragraphs 6.148 to 6.156) have been incorporated into SC-CAMLR-XXII/BG/18, together with the latest reassessment by IUCN/BirdLife International of the conservation status of albatrosses (with six species moving to categories of higher extinction risk), this being summarised in paragraph 6.144.

6.271 Members are again requested to provide 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 (paragraph 6.158).

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

6.272 Information was reported 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 (paragraphs 6.161 to 6.166);

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

(iii) FAO NPOA-Seabirds – noting some progress in development of plans (especially by New Zealand, Australia, Brazil, Falklands/Malvinas and South Africa) but very limited progress in implementation (paragraphs 6.171 to 6.176).

6.273 Recollecting that 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 longline fishing inside the Convention Area and with longline fishing for species other than *Dissostichus* in areas adjacent to the Convention Area (CCAMLR-XX, paragraph 6.33), outcomes of CCAMLR's efforts this year to collaborate with all relevant RFMOs to address these problems (paragraphs 6.177 to 6.192) include:

(i) CCSBT – report from the November 2001 meeting of the ERSWG was received, including the intention of Japan to respond to comments by CCAMLR on its NPOA (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 (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 (paragraphs 6.184 to 6.187);

(iv) IATTC – no observer programs in areas where Convention Area birds are likely to be caught (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 (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 (paragraph 6.191).

6.274 Recent initiatives addressing by-catch issues of albatrosses and petrels breeding in the Convention Area by New Zealand, USA and BirdLife International were commended (paragraphs 6.193 to 6.199).

Incidental Mortality of Seabirds in relation
to New and Exploratory Fisheries

6.275 (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 (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 (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 (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 (paragraphs 6.208 to 6.211).

(iii) The 29 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 Table 6.9 (paragraphs 6.206 and 6.207).

(iv) The only potential problems apparently needing resolving in respect of issues relating to incidental mortality of seabirds (Table 6.9 and paragraph 6.207) are:

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

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

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

(d) 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.

(v) 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, 58.4.3a and 58.4.3b.

(vi) Potential definitions of the nature and status of birds caught, in relation to the limits on seabird by-catch are provided (paragraph 6.212).

(vii) There may be a need to review appropriate levels of observation to detect accurately low levels of bird by-catch (paragraph 6.218).

Other Incidental Mortality

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

(ii) Interactions between cetaceans and longline fishing, including quantitative estimates of toothfish removals from fishing lines, were provided for Subarea 48.3 and for Chilean waters (paragraphs 6.220 and 6.221).

6.277 One krill trawl fishing vessel in Area 48 caught 73 Antarctic fur seals of which 26 were killed; as observer reports are unavailable until the close of the krill fishing season, further information is lacking. The Scientific Committee was requested to address how best to arrange appropriate reporting of incidental mortality from the krill fishery for consideration at WG-FSA (paragraphs 6.226 to 6.231).

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

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

(iii) Though 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 (paragraphs 6.234 and 6.235 and Table 6.10).

6.279 The Working Group noted new data and information relating to by-catch mitigation in the *C. gunnari* trawl fishery (paragraphs 6.237 to 6.240) and recommended that:

(i) data continue to be collected to improve mitigating measures for the *C. gunnari* 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 (paragraphs 6.244, 6.251 and 6.252);

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

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

6.280 Rather than revise *Fish the Sea Not the Sky*, now that the English version is out of print, the Working Group recommended that it might be replaced by appropriate poster material and requested estimated costs for this (paragraphs 6.253 to 6.255).

Table 6.1: Observed incidental mortality of seabirds in the longline fisheries for *Dissostichus* spp. in Subareas 48.3, 58.6, 58.7, 88.1, 88.2 and Divisions 58.4.2 and 58.5.2 during the 2002/03 season. Sp – Spanish method; Auto – autoliner; N – night-time setting; D – daytime setting (including nautical dawn and dusk); O – opposite side to hauling; S – same side as hauling; * – information obtained from cruise report.

Vessel	Dates of Fishing	Method	Sets Deployed				No. of Hooks (thousands)			Hooks Baited	No. of Birds Caught						Observed Seabird Mortality (birds/1 000 hooks)			Streamer Line in Use %		Offal Discharge during Haul (%)	
											Dead		Alive		Total								
			N	D	Total	%N	Obs.	Set	% Observed	(%)	N	D	N	D	N	D	N	D	Total	N	D		
Subarea 48.3																							
Argos Georgia	1/5–30/8/03	Sp	432	7	439	98	385.9	1453.4	26	100	0	0	2	0	2	0	0	0	0	99	100	O	(98)
Argos Helena	15/4–15/6/03	Sp	118	0	118	100	174.2	579.1	30	100	0	0	0	0	0	0	0	0	0	100		O	(98)
Argos Helena	21/6–30/8/03	Sp	148	0	148	100	271.8	733.0	37	100	0	0	0	0	0	0	0	0	0	99		O	
Cisne Verde	26/5–31/8/03	Sp	228	0	228	100	371.2	1332.7	27	100	0	0	0	0	0	0	0	0	0	100		O	(76)
Ibsa Quinto	1/5–4/8/03	Sp	108	0	108	100	381.9	2000.1	19	100	0	0	0	0	0	0	0	0	0	100		O	(98)
In Sung No. 66	22/5–29/8/03	Sp	151	3	154	98	257.3	1254.4	20	100	0	0	0	0	0	0	0	0	0	95	100	O	(98)
Isla Alegranza	1/5–22/7/03	Sp	144	0	144	100	228.1	1281.3	17	100	0	0	0	0	0	0	0	0	0	69		O	(100)
Isla Camila	25/5–10/7/03	Sp	184	0	184	100	179.9	861.6	20	99	0	0	0	0	0	0	0	0	0	100		O	(100)
Isla Santa Clara	1/5–26/8/03	Sp	244	7	251	97	273.9	1380.5	19	100	0	0	2	0	2	0	0	0	0	99	100	O	(98)
Isla Sofia	4/5–15/8/03	Sp	200	0	200	100	332.5	1107.5	30	100	0	0	0	0	0	0	0	0	0	100		O	(73)
Ivan Klyushin	4/5–30/8/03	Auto	330	5	335	99	523.8	2020.8	25	96	2	0	0	0	2	0	0.004	0	0.004	100	100	O	(61)
Jacqueline	4/5–30/8/03	Sp	134	0	134	100	612.5	2173.3	28	100	0	0	1	0	1	0	0	0	0	100		O	(99)
Koryo Maru No. 11	2/5–30/5/03	Sp	217	0	217	100	442.4	1621.7	27	100	0	0	0	0	0	0	0	0	0	100		O	(100)
Lodeynoye	7/7–23/7/03	Auto	35	0	35	100	77.0	121.5	63	80	0	0	1	0	1	0	0	0	0	100		O	
Magallanes III	2/5–25/8/03	Sp	169	37	206	82	381.5	1458.2	26	100	0	0	0	0	0	0	0	0	0	99	97	O	(68)
Polarpesca 1	3/5–26/8/03	Sp	264	0	264	100	291.3	1450.9	20	100	0	0	0	0	0	0	0	0	0	100		O	(86)
San Aotea II	4/5–22/6/03	Auto	133	0	133	100	384.1	915.2	41	100	0	0	0	0	0	0	0	0	0	100		O	(1)
Shinsei Maru No. 3	1/5–16/6/03	Sp	78	5	83	94	145.1	661.2	21	100	0	0	0	0	0	0	0	0	0	100	80	O	(89)
Shinsei Maru No. 3	19/6–20/6/03	Sp	6	0	6	100	6.6	34.8	19	100	0	0	0	0	0	0	0	0	0	100		O	(83)
Shinsei Maru No. 3	2/7–30/8/03	Sp	119	0	119	100	216.8	864.6	25	100	0	0	0	0	0	0	0	0	0	80		O	(95)
Tierra del Fuego	13/5–7/7/03	Sp	91	0	91	100	156.1	651.8	23	100	0	0	2	0	2	0	0	0	0	97		O	(98)
Tierra del Fuego	22/7–25/8/03	Sp	68	0	68	100	104.0	399.4	26	100	0	0	0	0	0	0	0	0	0	100		O	(97)
Viking Bay	10/5–23/8/03	Sp	309	0	309	100	255.8	1076.2	23	100	0	0	0	0	0	0	0	0	0	100		O	(99)
Total						98.4	6453.7	25433.2	25								<0.001	0	<0.001				
Subareas 58.6, 58.7, Area 51																							
Koryo Maru No. 11	31/1–30/3/03	Sp	95	1	96	99	481.6	957.6	50	100	0	0	0	0	0	0	0	0	0	100	100	O	(98)
South Princess	26/5–21/7/03	Auto	215	4	219	98	251.8	683.2	36	80	2	0	1	0	3	0	0.008	0	0.008	100	100	S	(99)
Total						98	733.4	1640.8	45								0.003	0	0.003				
Division 58.4.2																							
Eldfisk	5/2–25/3/03	Auto	34	106	140	24	250.7	599.3	41	90	0	0	0	0	0	0	0	0	0	79	98	(0)	
Total						24	250.7	599.3	41								0	0	0				
Division 58.5.2																							
Janas	6/5–22/6/03	Auto	94	0	94	100	288.4	641.4	44	94	0	0	0	0	0	0	0	0	0	100		(0)	
Total						100	288.4	641.4	44								0	0	0				
Subareas 88.1, 88.2																							
Avro Chieftain	12/2–15/4/03	Auto	33	65	98	34	250.0	507.7	49	91	0	0	0	0	0	0	0	0	0	100	100	(0)	
Avro Chieftain	1/5–3/6/03	Auto	27	20	47	57	153.2	266.1	57	86	0	0	0	0	0	0	0	0	0	100	100	(0)	
Gudni Olafsson	20/2–14/3/03	Auto	22	20	42	52	92.0	174.2	52	91	0	0	0	0	0	0	0	0	0	100	100	(0)	
Janas	28/12–9/3/03	Auto	25	94	119	21	288.8	472.6	61	90	0	0	0	0	0	0	0	0	0	100	100	(0)	
San Aotea II	24/12–6/3/03	Auto	4	105	109	4	304.7	635.9	47	90	0	0	0	0	0	0	0	0	0	100	100	(0)	
San Liberatore	15/2–27/4/03	Auto	43	72	115	37	167.6	467.0	35	90	0	0	0	0	0	0	0	0	0	100	100	(0)	
Sonrisa	21/1–7/2/03	Auto	3	20	23	13	41.8	100.2	41	73	0	0	0	0	0	0	0	0	0	100	100	(0)	
South Princess	18/1–2/3/03	Auto	18	81	99	18	172.9	335.0	51	84	0	0	0	0	0	0	0	0	0	100	100	S	(1)
Volna	23/12–17/3/03	Sp	4	97	101	4	562.3	905.8	62	100	0	0	0	0	0	0	0	0	0	100	100	(0)	
Yantar	24/12–19/3/03	Sp	7	120	127	6	481.8	952.5	50	100	0	0	0	0	0	0	0	0	0	100	100	(0)	
Total						21	2515.1	4817.0	52								0	0	0				

Table 6.2: Estimated total seabird mortality for those vessels where seabird mortalities were observed in Subareas 48.3, 58.6, 58.7 and Area 51 during the 2002/03 season.

Vessel	Hooks Observed (thousands)	Hooks Set (thousands)	% Hooks Observed	% Night Sets	Estimated Number of Birds Caught Dead		
					Night	Day	Total
Subarea 48.3							
Ivan Klyushin	523.8	2020.8	25	99	8	0	8
Subareas 58.6, 58.7, Area 51							
South Princess	251.8	683.2	36	98	7	0	7
Total					15	0	15

Table 6.3: Total estimated seabird by-catch and by-catch rate (birds/thousand hooks) in longline fisheries in Subareas 48.3, 58.6 and 58.7 from 1997 to 2003.

Subarea	Year						
	1997	1998	1999	2000	2001	2002	2003
Subarea 48.3							
Estimated by-catch	5 755	640	210*	21	30	27	8
By-catch rate	0.23	0.032	0.013*	0.002	0.002	0.0015	0.0003
Subareas 58.6, 58.7							
Estimated by-catch	834	528	156	516	199	0	7
By-catch rate	0.52	0.194	0.034	0.046	0.018	0	0.003

* Excluding *Argos Helena* line-weighting experiment cruise.

Table 6.4: Species composition of birds killed in longline fisheries in Subareas 48.3, 58.6 and 58.7 and Area 51 during the 2002/03 season. N – night setting; D – daylight setting (including nautical dawn and dusk); DAC – cape petrel; DIC – grey headed albatross; PRO – white-chinned petrel; PCI – grey petrel; () – % composition.

Vessel	Dates of Fishing	No. Birds Killed by Group						Species Composition (%)			
		Albatross		Petrel		Total		DIC	PRO	PCI	DAC
		N	D	N	D	N	D				
Subarea 48.3											
Ivan Klyushin	4/5–30/8/03	1	0	1	0	2	0	1 (50)			1 (50)
Subareas 58.6, 58.7, Area 51											
South Princess	26/5–21/7/03	0	0	2	0	2	0		1 (50)	1 (50)	
Total (%)		0	0	2	0	2	0	1 (25)	1 (25)	1 (25)	1 (25)

Table 6.5: Compliance, as reported by observers, of streamer lines with the minimum specifications set out in Conservation Measure 25-02 during the 2002/03 season. Y: yes; N: no; -: no information; A: autoliner; Sp: Spanish; AUS – Australia; CHL – Chile; ESP – Spain; GBR – United Kingdom; JPN – Japan; KOR – Republic of Korea; NZL – New Zealand; RUS – Russia; URY – Uruguay; ZAF – South Africa.

Vessel Name (Nationality)	Dates of Fishing	Fishing Method	Compliance with CCAMLR Specifications	Compliance with Details of Streamer Line Specifications				Length of Streamers (m)	Streamer Line in Use %	
				Attachment Height above Water (m)	Total Length (m)	No. Streamers per Line	Spacing of Streamers per Line (m)		Night	Day
Subarea 48.3										
Argos Georgia (GBR)	15–30/8/03	Sp	Y	Y (6)	Y (165)	Y (5)	Y (5)	Y (5–2.8)	99	100
Argos Helena (GBR)	15/4–15/6/03	Sp	Y	Y (5)	Y (180)	Y (5)	Y (5)	Y (4–2)	100	
Argos Helena (GBR)	19/6–31/8/03	Sp	Y	Y (5)	Y (166)	Y (5)	Y (5)	-	99	
Cisne Verde (CHL)	26/5–31/8/03	Sp	Y	Y (5.5)	Y (151)	Y (6)	Y (5)	Y (7–5)	100	
Ibsa Quinto (ESP)	22/4–13/8/03	Sp	N	N (3.5)	Y (150)	Y (10)	Y (5)	-	100	
In Sung No. 66 (KOR)	22/5–30/8/03	Sp	Y	Y (6)	Y (168)	Y (5)	Y (5)	-	95	100
Isla Alegranza (URY)	1/5–24/7/03	Sp	N	N (3.5)	Y (150)	Y (8)	Y (10)	-	69	
Isla Camila (CHL)	1/5–12/7/03	Sp	Y	Y (4.5)	Y (150)	Y (5)	Y (5)	-	100	
Isla Santa Clara (CHL)	1/5–26/8/03	Sp	Y	Y (6)	Y (150)	Y (5)	Y (5)	-	99	100
Isla Sofia (CHL)	3/5–16/8/03	Sp	Y	Y (6)	Y (160)	Y (5)	Y (5)	Y (5–3.6)	100	
Ivan Klyushin (RUS)	4/5–30/8/03	A	Y	Y (6.5)	Y (151)	Y (5)	Y (5)	Y (4–1.5)	100	100
Jacqueline (GBR)	4/5–30/8/03	Sp	Y	Y (5)	Y (162)	Y (5)	Y (5)	-	100	
Koryo Maru 11 (ZAF)	2/5–31/8/03	Sp	Y	Y (6.5)	Y (180)	Y (10)	Y (5)	-	100	
Lodeynoye (RUS)	1/7–16/8/03	A	N	Y (5)	N (125)	Y (24)	Y (5)	N (2–1)	100	
Magallanes III (CHL)	2/5–25/8/03	Sp	Y	Y (5)	Y (163)	Y (5)	Y (5)	Y (6–3)	99	97
Polar Pesca 1 (CHL)	3/5–27/8/03	Sp	Y	Y (5)	Y (153)	Y (5)	Y (5)	-	100	
San Aotea II (NZL)	3/5–23/6/03	A	Y	Y (5)	Y (199)	Y (13)	Y (5)	-	100	
Shinsei Maru No.3 (JPN)	28/4–17/6/03	Sp	Y	Y (5)	Y (154)	Y (5)	Y (5)	-	100	80
Shinsei Maru No.3 (JPN)	17–26/6/03	Sp	Y	Y (5)	Y (154)	Y (5)	Y (5)	-	100	
Shinsei Maru No.3 (JPN)	2/7–30/8/03	Sp	Y	Y (5)	Y (232)	Y (9)	Y (5)	Y (7–2.5)	80	
Tierra del Fuego (CHL)	11/5–9/7/03	Sp	Y	Y (6)	Y (172)	Y (31)	Y (5)	-	97	
Tierra del Fuego (CHL)	22/7–23/8/03	Sp	Y	Y (7)	Y (150)	Y (30)	Y (5)	-	100	
Viking Bay (ESP)	10/5–24/8/03	SP	Y	Y (6)	Y (153)	Y (10)	Y (5)	-	100	
Subareas 58.6, 58.7										
Koryo Maru No. 11 (ZAF)	25/1–5/4/03	Sp	Y	Y (5)	Y (150)	Y (7)	Y (5)	Y (7–5)	100	100
South Princess (ZAF)	21/5–27/7/03	A	Y	Y (8)	Y (150)	Y (5)	Y (5)	Y (3.5–1.3)	100	100

(continued)

Table 6.5 (continued)

Vessel Name (Nationality)	Dates of Fishing	Fishing Method	Compliance with CCAMLR Specifications	Compliance with Details of Streamer Line Specifications				Length of Streamers (m)	Streamer Line in Use %	
				Attachment Height above Water (m)	Total Length (m)	No. Streamers per Line	Spacing of Streamers per Line (m)		Night	Day
Division 58.4.2										
Eldfisk (AUS)	18/1–8/4/03	A	Y	Y (6)	Y (150)	Y (5)	Y (5)	Y (4–1.3)	79	98
Division 58.5.2										
Janas (AUS)	23/4–8/7/03	A	Y	Y (5)	Y (150)	Y (15)	Y (2.5)	Y (4–1.5)	100	
Subareas 88.1, 88.2										
Avro Chieftain (NZL)	7/2–22/4/03	A	Y	Y (8)	Y (185)	Y (8)	Y (5)	Y (4–0.5)	100	100
Avro Chieftain (NZL)	25/4–10/6/03	A	Y	Y (7)	Y (192)	Y (12)	Y (4)	Y (11–4)	100	100
Gudni Olafsson (NZL)	6/2–27/3/03	A	Y	Y (8)	Y (167)	Y (11)	Y (4)	Y (7.5–2)	100	100
Janas (NZL)	20/12/02–18/3/03	A	Y	Y (6.5)	Y (250)	Y (16)	Y (4)	Y (5–1.3)	100	100
San Aotea II (NZL)	14/12/02–15/3/03	A	Y	Y (5)	Y (155)	Y (12)	Y (4)	Y (8–1.5)	100	100
San Liberatore (NZL)	6/2–7/5/03	A	Y	Y (8)	Y (175)	Y (7)	Y (5)	Y (8–1.5)	100	100
Sonrisa (NZL)	8/1–19/2/03	A	Y	Y (12)	Y (250)	Y (10)	Y (5)	Y (6–1)	100	100
South Princess (ZAF)	10/1–11/3/03	A	Y	Y (9)	Y (150)	Y (5)	Y (5)	Y (4–1.3)	100	100
Volna (RUS)	24/11/02–2/5/03	Sp	Y	Y (5)	Y (150)	Y (5)	Y (5)	Y (4–1.3)	100	100
Yantar (RUS)	27/11/02–22/4/03	Sp	Y	Y (5)	Y (150)	Y (6)	Y (5)	Y (4–0.8)	100	100

Table 6.6: Summary of compliance with Conservation Measure 25-02, based on data from scientific observers from the 1996/97 to the 2002/03 season. Values in parentheses are % of observer records that were complete. na – not applicable.

Subarea/ Time	Line Weighting (Spanish System Only)			Night Setting (% Night)	Offal Discharge (%) Opposite Haul	Streamer Line Compliance (%)										Total Catch Rate (birds/1 000 hooks)	
	Compliance %	Median Weight (kg)	Median Spacing (m)			Overall		Attached Height		Total Length		No. Streamers		Distance Apart		Night	Day
Subarea 48.3																	
1996/97	0 (91)	5.0	45	81	0 (91)	6	(94)	47	(83)	24	(94)	76	(94)	100	(78)	0.18	0.93
1997/98	0 (100)	6.0	42.5	90	31 (100)	13	(100)	64	(93)	33	(100)	100	(93)	100	(93)	0.03	0.04
1998/99	5 (100)	6.0	43.2	80[1]	71 (100)	0	(95)	84	(90)	26	(90)	76	(81)	94	(86)	0.01	0.08[1]
1999/00	1 (91)	6.0	44	92	76 (100)	31	(94)	100	(65)	25	(71)	100	(65)	85	(76)	<0.01	<0.01
2000/01	21 (95)	6.8	41	95	95 (95)	50	(85)	88	(90)	53	(94)	94	94	82	(94)	<0.01	<0.01
2001/02	63 (100)	8.6	40	99	100 (100)	87	(100)	94	(100)	93	(100)	100	(100)	100	(100)	0.002	0
2002/03	100 (100)	9.0	39	98	100 (100)	87	(100)	91	(100)	96	(100)	100	(100)	100	(100)	<0.001	0
Division 58.4.2																	
2002/03	Auto only	na	na	24[5]	No discharge	100	(100)	100	(100)	100	(100)	100	(100)	100	(100)	0	0
Division 58.4.4																	
1999/00	0 (100)	5	45	50	0 (100)	0	(100)	100	(100)	0	(100)	100	(100)	100	(100)	0	0
Division 58.5.2																	
2002/03	Auto only	na	na	100	No discharge	100	(100)	100	(100)	100	(100)	100	(100)	100	(100)	0	0
Subareas 58.6, 58.7																	
1996/97	0 (60)	6	35	52	69 (87)	10	(66)	100	(60)	10	(66)	90	(66)	60	(66)	0.52	0.39
1997/98	0 (100)	6	55	93	87 (94)	9	(92)	91	(92)	11	(75)	100	(75)	90	(83)	0.08	0.11
1998/99	0 (100)	8	50	84[2]	100 (89)	0	(100)	100	(90)	10	(100)	100	(90)	100	(90)	0.05	0
1999/00	0 (83)	6	88	72	100 (93)	8	(100)	91	(92)	0	(92)	100	(92)	91	(92)	0.03	0.01
2000/01	18 (100)	5.8	40	78	100 (100)	64	(100)	100	(100)	64	(100)	100	(100)	100	(100)	0.01	0.04
2001/02	66 (100)	6.6	40	99	100 (100)	100	(100)	100	(100)	100	(100)	100	(100)	100	(100)	0	0
2002/03	0 (100)	6.0	41	98	50 (100)	100	(100)	100	(100)	100	(100)	100	(100)	100	(100)	<0.01	0
Subarea 88.1																	
1996/97	Auto only	na	na	50	0 (100)	100	(100)	100	(100)	100	(100)	100	(100)	100	(100)	0	0
1997/98	Auto only	na	na	71	0 (100)	100	(100)	100	(100)	100	(100)	100	(100)	100	(100)	0	0
1998/99	Auto only	na	na	1[3]	100 (100)	100	(100)	100	(100)	100	(100)	100	(100)	100	(100)	0	0
1999/00	Auto only	na	na	6[4]	No discharge	67	(100)	100	(100)	67	(100)	100	(100)	100	(100)	0	0
2000/01	1 (100)	12	40	18[4]	No discharge	100	(100)	100	(100)	100	(100)	100	(100)	100	(100)	0	0
2001/02	Auto only	na	na	33[4]	No discharge	100	(100)	100	(100)	100	(100)	100	(100)	100	(100)	0	0
2002/03	100 (100)	9.6	41	21[4]	1 incidence of offal dumping	100	(100)	100	(100)	100	(100)	100	(100)	100	(100)	0	0

[1] Includes daytime setting – and associated seabird by-catch – as part of line-weighting experiments on *Argos Helena* (WG-FSA-99/5).

[2] Includes some daytime setting in conjunction with use of an underwater-setting funnel on *Eldfisk* (WG-FSA-99/42).

[3] Conservation Measure 169/XVII allowed New Zealand vessels to undertake daytime setting south of 65°S in Subarea 88.1 to conduct a line-weighting experiment.

[4] Conservation Measures 210/XIX, 216/XX and 41-09 permit daytime setting south of 65°S in Subarea 88.1 if they could demonstrate a sink rate of 0.3 m/s.

[5] Conservation Measure 41-05 permits daytime setting in Division 58.4.2 if the vessel can demonstrate a sink rate of 0.3 m/s.

Table 6.7: Vessel compliance (%) with Conservation Measure 25-02 during the 2002/03 season. Those vessels that achieved full compliance with all elements of the conservation measure are indicated in bold type. Values for night setting, offal discharge and streamer line setting are absolute proportions for all sets by each vessel. Values for line weighting and streamer line design are either full compliance (i.e. 100%) or not compliant (i.e. 0%). AUS – Australia; CHL – Chile; ESP – Spain; GBR – United Kingdom; JPN – Japan; KOR – Republic of Korea; NZL – New Zealand; RUS – Russia; URY – Uruguay; ZAF – South Africa.

Vessel	Number of Cruises	Night Setting	Offal Discharge	Line Weighting	Streamer Line Setting	Streamer Line Design
Subarea 48.3						
Argos Georgia (GBR)	1	98	100	100	99	100
Argos Helena (GBR)	2	100	100	100	99	100
***Cisne Verde* (CHL)**	**1**	**100**	**100**	**100**	**100**	**100**
Ibsa Quinto (ESP)	1	100	100	100	100	0
In Sung No. 66 (KOR)	1	98	100	100	95	100
Isla Alegranza (URY)	1	100	100	100	69	0
***Isla Camila* (CHL)**	**1**	**100**	**100**	**100**	**100**	**100**
Isla Santa Clara (CHL)	1	97	100	100	99	100
***Isla Sofía* (CHL)**	**1**	**100**	**100**	**100**	**100**	**100**
Ivan Klyushin (RUS)	1	99	100	Autoliner	100	100
***Jacqueline* (GBR)**	**1**	**100**	**100**	**100**	**100**	**100**
***Koryo Maru No. 11* (ZAF)**	**1**	**100**	**100**	**100**	**100**	**100**
Lodeynoye (RUS)	1	100	100	Autoliner	100	0
Magallanes III (CHL)	1	82	100	100	99	100
***Polar Pesca 1* (CHL)**	**1**	**100**	**100**	**100**	**100**	**100**
***San Aotea II* (NZL)**	**1**	**100**	**100**	**Autoliner**	**100**	**100**
Shinsei Maru No.3 (JPN)	3	98	100	100	88	100
Tierra del Fuego (CHL)	2	100	100	100	98	100
***Viking Bay* (ESP)**	**1**	**100**	**100**	**100**	**100**	**100**
Subareas 58.6, 58.7						
Koryo Maru No. 11 (ZAF)	1	99	100	0	100	100
South Princess (ZAF)	1	98	1	Autoliner	100	100
Division 58.4.2						
Eldfisk (AUS)+	1	24	100	Autoliner	93	100
Division 58.5.2						
***Janas* (AUS)**	**1**	**100**	**100**	**Autoliner**	**100**	**100**
Subareas 88.1, 88.2						
Avro Chieftain* (NZL)	**2**	**41**	**100**	**Autoliner**	**100**	**100**
Gudni Olafsson* (NZL)	**1**	**52**	**100**	**Autoliner**	**100**	**100**
Janas* (NZL)	**1**	**21**	**100**	**Autoliner**	**100**	**100**
San Aotea II* (NZL)	**1**	**4**	**100**	**Autoliner**	**100**	**100**
San Liberatore* (NZL)	**1**	**37**	**100**	**Autoliner**	**100**	**100**
Sonrisa* (NZL)	**1**	**13**	**100**	**Autoliner**	**100**	**100**
South Princess* (ZAF)	**1**	**18**	**99**	**Autoliner**	**100**	**100**
Volna* (RUS)	**1**	**4**	**100**	**100**	**100**	**100**
Yantar* (RUS)	**1**	**6**	**100**	**100**	**100**	**100**

* Conservation Measure 41-09 allows fishing in Subarea 88.1 during daylight periods if the vessel can demonstrate a minimum sink rate of 0.3 m/s.

\+ Conservation Measure 41-05 permits daytime setting in Division 58.4.2 if the vessel can demonstrate a sink rate of 0.3 m/s.

Table 6.8: Estimate of seabird by-catch in the IUU *Dissostichus* spp. fishery in Subareas 48.3, 58.6 and 58.7 and Divisions 58.4.4, 58.5.1 and 58.5.2 in fishing season 2003 and 1996 to 2002 combined. Lower and upper refer to 95% confidence limit.

Subarea/ Division	Year	Estimated Total Potential Seabird By-catch		
		Lower	Median	Upper
48.3	2003	0	0	0
	1996–2002	1 811	3 441	56 031
58.5.1	2003	10 888	13 284	35 470
	1996–2002	36 101	44 047	117 611
58.5.2	2003	1 066	1 300	3 472
	1996–2002	30 792	37 570	100 315
58.4.4	2003	593	724	1 932
	1996–2002	15 717	19 177	51 204
58.6	2003	1 329	1 622	4 330
	1996–2002	41 948	51 181	136 659
58.7	2003	537	655	1 749
	1996–2002	11 569	14 115	37 690
88.1	2003	0	0	0
	1996–2002	32	39	104
Totals	2003	14 412	17 585	46 954
	1996–2002	137 969	169 570	499 613
Overall Total		152 381	187 155	546 567

Table 6.9: Summary of IMAF risk level and assessment in relation to proposed new and exploratory longline fisheries in 2003/04. Risk scales are as follows: 1 – low; 2 – average-to-low; 3 – average; 4 – average-to-high; 5 – high. Text in bold indicates conflict with IMAF advice provided. Text highlighted indicates issues needing resolution.

Area	Risk Scale	IMAF Risk Assessment	Notes
48.1	3	**Average risk.** Ensure strict compliance with Conservation Measure 25-02. Prohibit longline fishing during the breeding season of black-browed and grey-headed albatrosses, southern giant petrels and white-chinned petrels (i.e. September to April), except where fishing is undertaken under the provisions currently prescribed under Conservation Measure 24-02. In addition, vessels that catch a total of three (3) birds shall revert to night setting.	• Argentina (CCAMLR-XXII/15) proposes to fish from 1 December 2003 to 30 November 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. Proposal does not conflict with advice provided.
48.2	3	**Average risk.** Ensure strict compliance with Conservation Measure 25-02. Prohibit longline fishing during the breeding season of southern giant petrels (October to March), except where fishing is undertaken under the provisions currently prescribed under Conservation Measure 24-02. In addition, vessels that catch a total of three (3) birds shall revert to night setting.	• Argentina (CCAMLR-XXII/15) proposes to fish from 1 December 2003 to 30 November 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. Proposal does not conflict with advice provided.
48.3	5	**High risk.** Prohibit longline fishing during the main albatross and petrel breeding season (i.e. September to April); ensure strict compliance with Conservation Measure 25-02.	• Namibia (CCAMLR-XXII/29) proposes to fish from 1 December 2003 to 30 November 2004. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 29/XVI (sic) (25-02) or other measures determined by CCAMLR, noting that some variation to the application of paragraph 3 (night-setting requirement) has been previously allowed in Subarea 88.1 (Conservation Measure 24-02). Proposal conflicts with advice provided with respect to the length of fishing season and appointment of only one observer (additional observer desirable but not mandatory – Conservation Measure 41-02).
48.6	2	**Average-to-low risk – southern part of area (south of c. 55°S) of low risk.** No obvious need for restriction of longline fishing season. Ensure strict compliance with Conservation Measure 25-02 as a seabird by-catch precautionary measure. Fishing during daytime should only be permitted under the provisions currently prescribed under Conservation Measure 24-02. In addition, vessels that catch a total of three (3) birds shall revert to night setting.	• Argentina (CCAMLR-XXII/16) proposes to fish from 1 March to 31 August 2004 north of 60°S, and from 15 February to 15 October 2004 south of 60°S. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. Proposal does not conflict with advice provided.

(continued)

Area	Risk Scale	IMAF Risk Assessment	Notes
48.6 (continued)			• Japan (CCAMLR-XXII/26) proposes to fish from 15 February to 15 October 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02. Proposal does not conflict with advice provided. • Namibia has submitted three applications for Subarea 48.6, which conflict in their intentions to comply with necessary seabird by-catch conservation measures. The status of these applications is unclear. They have been submitted by fishing companies and may not be submissions from the Government of Namibia. 1. Namibia (CCAMLR-XXII/29) proposes to fish from 1 December 2003 to 30 November 2004. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 29/XVI (sic) (25-02) or other measures determined by CCAMLR, noting that some variation to the application of paragraph 3 (night-setting requirement) has been previously allowed in Subarea 88.1 (Conservation Measure 24-02). Proposal does not conflict with advice provided, subject to amendment to Conservation Measure 24-02 to include this subarea, and to removal of operational restriction to areas south of latitude 60°S. Note that appointment of only one observer is proposed (additional observer is mandatory – Conservation Measure 41-04). 2. Namibia (CCAMLR-XXII/28) proposes to fish from 1 December 2003 to August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Namibian observer. Intends to comply with Conservation Measure 29/XVI (sic) (25-02). Proposal does not conflict with advice provided. 3. Namibia (CCAMLR-XXII/30) proposes to fish from 1 December 2003 to 31 August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Namibian observer. Intention to comply with Conservation Measure 25-02 not stated. Proposal conflicts with advice provided with respect to compliance with Conservation Measure 25-02.

(continued)

Area	Risk Scale	IMAF Risk Assessment	Notes
48.6 (continued)			• New Zealand (CCAMLR-XXII/32) proposes to fish north of 60°S from 1 March to 31 August 2004, and south of 60°S from 15 February to 15 October 2004. Two scientific observers, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation; 24-hour observer coverage proposed. Intends to comply fully with Conservation Measure 25-02 north of 60°S. For fishing south of 60°S, a variation to Conservation Measure 25-02 is sought consistent with the approaches approved by CCAMLR in Conservation Measures 41-04, paragraphs 6 and 7 (minimum line sink rate of 0.3 m/s, three-bird limit for daylight setting, no offal discharge). Proposal does not conflict with advice provided. • South Africa (CCAMLR-XXII/39) proposes to fish during a season to be established at CCAMLR-XXII. States its acceptance of IMAF assessments and intent to comply with Conservation Measure 25-02. Proposal does not conflict with advice provided. • Spain (CCAMLR-XXII/7) proposes to fish during a season to be established at CCAMLR-XXII. Intends to comply with Conservation Measures 25-02, 41-04 and 41-09. Proposal does not conflict with advice provided.
58.4.1	3	**Average-to-low risk.** Ensure strict compliance with Conservation Measure 25-02 as a seabird by-catch precautionary measure. Longline fishing season limits of uncertain advantage. Fishing during daytime should only be permitted under the provisions currently prescribed under Conservation Measure 24-02. In addition, vessels that catch a total of three (3) birds shall revert to night setting. Note: a conservation measure relating to a research plan for exploratory fisheries (41 series) does not exist for this fishery. The relevant conservation measure which will be drafted if this fishery is approved should require all vessels to have at least two scientific observers on board throughout all fishing activities, similar to the requirement of Conservation Measure 41-05 for Division 58.4.2.	• Argentina (CCAMLR-XXII/15) proposes to fish from 1 December 2003 to 30 November 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. Proposal does not conflict with advice provided. • Australia (CCAMLR-XXII/22) proposes to fish from 1 December 2003 to 30 November 2004 (south of 60°S); and from 1 May to 31 August 2004 (north of 60°S). Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Australian observer. Intends to comply with or exceed the provisions of Conservation Measure 25-02, specifically through offal retention and the use of twin streamer lines. Seek exemption to night-setting requirements through achieving a sink rate of at least 0.3 m/s to a depth of 15 m as specified in Conservation Measure 24-02. Proposal does not conflict with advice provided, subject to amendment to Conservation Measure 24-02 to permit a derogation to setting of longlines at night.

(continued)

Area	Risk Scale	IMAF Risk Assessment	Notes
58.4.1 (continued)			• Namibia (CCAMLR-XXII/31) proposes to fish from 1 December 2003 to 30 November 2004. Number of scientific observers on each vessel not stated. Intention to comply with Conservation Measure 25-02 not stated. Proposal conflicts with advice provided with respect to adherence to Conservation Measure 25-02. Use of two observers strongly recommended. • The USA (CCAMLR-XXII/41) proposes to fish during a season to be established at CCAMLR-XXII. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02. Proposal does not conflict with advice provided. Use of two observers strongly recommended.
58.4.2	2	**Average risk.** Ensure strict compliance with Conservation Measure 25-02. Prohibit longline fishing during the breeding season of giant petrels (October to March), except where fishing is undertaken under the provisions currently prescribed under Conservation Measure 24-02. In addition, vessels that catch a total of three (3) birds shall revert to night setting.	• Argentina (CCAMLR-XXII/17) proposes to fish from 1 December 2003 to 30 November 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. Proposal does not conflict with advice provided. • Australia (CCAMLR-XXII/23) proposes to fish from 1 December 2003 to 30 November 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Australian observer. Intends to comply with or exceed the provisions of Conservation Measure 25-02, specifically through offal retention and the use of twin streamer lines. Seeks exemption to night-setting requirements through achieving a sink rate of at least 0.3 m/s to a depth of 15 m as specified in Conservation Measure 24-02. Proposal does not conflict with advice provided. • Namibia (CCAMLR-XXII/29) proposes to fish from 1 December 2003 to 30 November 2004. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 29/XVI (sic) (25-02) or other measures determined by CCAMLR, noting that some variation to the application of paragraph 3 (night-setting requirement) has been previously allowed in Subarea 88.1 (Conservation Measure 24-02). Proposal does not conflict with advice provided.

(continued)

Area	Risk Scale	IMAF Risk Assessment	Notes
58.4.2 (continued)			• Russia (CCAMLR-XXII/37) proposes to fish from 1 December 2003 to 31 August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Russian observer, with 24-hour observer coverage. Seeks approval to set during daylight hours south of 55°S through achieving a sink rate of at least 0.3 m/s (as specified in Conservation Measures 24-02 and 41-05). Proposal does not conflict with advice provided for Division 58.4.2. • Ukraine (CCAMLR-XXII/34) proposes to fish from 15 December 2003 to 30 April 2004. Two scientific observers on each vessel are proposed, including one appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02 but seeks a variation to permit daylight setting of lines in high latitudes after meeting the requirements of Conservation Measure 24-02. Proposal does not conflict with advice provided. • The USA (CCAMLR-XXII/41) proposes to fish during a season to be established at CCAMLR-XXII. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02. Proposal does not conflict with advice provided, noting advice provided at the meeting that two observers will be provided to comply with Conservation Measure 41-05.
58.4.3a	3	**Average risk.** Ensure strict compliance with Conservation Measure 25-02. Prohibit longline fishing during the breeding season of albatrosses, giant petrels and white-chinned petrels (September to April), except where fishing is undertaken under the provisions currently prescribed under Conservation Measure 24-02. In addition, vessels that catch a total of three (3) birds shall revert to night setting.	• Argentina (CCAMLR-XXII/18) proposes to fish from 1 May to 31 August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. Proposal does not conflict with advice provided. • Australia (CCAMLR-XXII/24) proposes to fish from 1 May to 31 August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Australian observer. Intends to comply with or exceed the provisions of Conservation Measure 25-02, specifically through offal retention, the use of twin streamer lines, and possibly through setting catch limits for bird species. Proposal does not conflict with advice provided.

(continued)

Area	Risk Scale	IMAF Risk Assessment	Notes
58.4.3a (continued)			• Namibia (CCAMLR-XXII/29) proposes to fish from 1 December 2003 to 30 November 2004. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 29/XVI (sic) (25-02) or other measures determined by CCAMLR, noting that some variation to the application of paragraph 3 (night-setting requirement) has been previously allowed in Subarea 88.1 (Conservation Measure 24-02). Proposal does not conflict with advice provided, subject to amendment to Conservation Measure 24-02 to include this division, and to removal of operational restriction to areas south of latitude 60°S. Note that appointment of only one observer is proposed (additional observer desirable but not mandatory – Conservation Measure 41-06). • Russia (CCAMLR-XXII/37) proposes to fish from 1 December 2003 to 31 August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Russian observer, with 24-hour observer coverage. Seeks approval to set during daylight hours south of 55°S through achieving a sink rate of at least 0.3 m/s (as specified in Conservation Measures 24-02). Proposal does not conflict with advice provided, subject to amendment to Conservation Measure 24-02 to include this division, and to removal of operational restriction to areas south of latitude 60°S. • Ukraine (CCAMLR-XXII/35) proposes to fish from 1 March [1 May] to 30 May 2004. Two scientific observers on each vessel are proposed, including one appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02. Proposal does not conflict with advice provided with respect to fishing season. • The USA (CCAMLR-XXII/41) proposes to fish during a season to be established at CCAMLR-XXII. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02. Proposal does not conflict with advice provided, subject to amendment to Conservation Measure 24-02 to include this division, and to removal of operational restriction to areas south of latitude 60°S. Note that appointment of only one observer is proposed (additional observer desirable but not mandatory – Conservation Measure 41-06).

(continued)

Area	Risk Scale	IMAF Risk Assessment	Notes
58.4.3b	3	**Average risk.** Ensure strict compliance with Conservation Measure 25-02. Prohibit longline fishing during the breeding season of albatrosses, giant petrels and white-chinned petrels (September to April), except where fishing is undertaken under the provisions currently prescribed under Conservation Measure 24-02. In addition, vessels that catch a total of three (3) birds shall revert to night setting.	• Argentina (CCAMLR-XXII/18) proposes to fish from 1 May to 31 August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. Proposal does not conflict with advice provided. • Australia (CCAMLR-XXII/24) proposes to fish from 1 May to 31 August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Australian observer. Intends to comply with or exceed the provisions of Conservation Measure 25-02, specifically through offal retention, the use of twin streamer lines, and possibly through setting catch limits for bird species. Proposal does not conflict with advice provided. • Namibia (CCAMLR-XXII/29) proposes to fish from 1 December 2003 to 30 November 2004. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 29/XVI (sic) (25-02) or other measures determined by CCAMLR, noting that some variation to the application of paragraph 3 (night-setting requirement) has been previously allowed in Subarea 88.1 (Conservation Measure 24-02). Proposal does not conflict with advice provided, subject to amendment to Conservation Measure 24-02 to include this division, and to removal of operational restriction to areas south of latitude 60°S. Note that appointment of only one observer is proposed (additional observer desirable but not mandatory – Conservation Measure 41-06). • Russia (CCAMLR-XXII/37) proposes to fish from 1 December 2003 to 31 August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Russian observer, with 24-hour observer coverage. Seeks approval to set during daylight hours south of 55°S through achieving a sink rate of at least 0.3 m/s (as specified in Conservation Measures 24-02). Proposal does not conflict with advice provided, subject to amendment to Conservation Measure 24-02 to include this division, and to removal of operational restriction to areas south of latitude 60°S.

(continued)

Area	Risk Scale	IMAF Risk Assessment	Notes
58.4.3b (continued)			• Ukraine (CCAMLR-XXII/35) proposes to fish from 1 March [1 May] to 30 May 2004. Two scientific observers on each vessel are proposed, including one appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02. Proposal does not conflict with advice provided with respect to fishing season. • The USA (CCAMLR-XXII/41) proposes to fish during a season to be established at CCAMLR-XXII. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02. Proposal does not conflict with advice provided, subject to amendment to Conservation Measure 24-02 to include this division, and to removal of operational restriction to areas south of latitude 60°S. Note that appointment of only one observer is proposed (additional observer desirable but not mandatory – Conservation Measure 41-06).
58.4.4	3	**Average risk.** Ensure strict compliance with Conservation Measure 25-02. Prohibit longline fishing during the breeding season of albatrosses and petrels (September to April), except where fishing is undertaken under the provisions currently prescribed under Conservation Measure 24-02. In addition, vessels that catch a total of three (3) birds shall revert to night setting. Note: a conservation measure relating to a research plan for exploratory fisheries (41 series) does not exist for this fishery. The relevant conservation measure which will be drafted if this fishery is approved should require all vessels to have at least two scientific observers on board throughout all fishing activities, similar to the requirement of Conservation Measure 41-05 for Division 58.4.2.	• Argentina (CCAMLR-XXII/15) proposes to fish from 1 December 2003 to 30 November 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. Proposal does not conflict with advice provided. • Namibia has submitted two applications for Division 58.4.4, which conflict in their intentions to comply with necessary seabird by-catch conservation measures. The status of these applications is unclear. They have been submitted by fishing companies and may not be submissions from the Government of Namibia. 1. Namibia (CCAMLR-XXII/29) proposes to fish from 1 December 2003 to 30 November 2004. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 29/XVI (sic) (25-02) or other measures determined by CCAMLR, noting that some variation to the application of paragraph 3 (night-setting requirement) has been previously allowed in Subarea 88.1 (Conservation Measure 24-02). Proposal does not conflict with advice provided, subject to amendment to Conservation Measure 24-02 to include this division, and to removal of operational restriction to areas south of latitude 60°S. Use of two observers strongly recommended.

(continued)

Area	Risk Scale	IMAF Risk Assessment	Notes
58.4.4 (continued)			2. Namibia (CCAMLR-XXII/28) proposes to fish from 1 December 2003 to August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Namibian observer. Intends to comply with Conservation Measure 29/XVI (sic) (25-02). Proposal conflicts with advice provided with respect to fishing season.
58.5.1	5	**High risk.** Prohibit longline fishing during the main albatross and petrel breeding season (i.e. September to April); ensure strict compliance with Conservation Measure 25-02.	• Argentina (CCAMLR-XXII/20) proposes to fish from 1 December 2003 to 30 November 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. Proposal conflicts with advice provided with respect to fishing season. • Namibia (CCAMLR-XXII/28) proposes to fish from 1 December 2003 to August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Namibian observer. Intends to comply with Conservation Measure 29/XVI (sic) (25-02). Proposal conflicts with advice provided with respect to fishing season.
58.5.2 west of 79°20'E	4	**Average-to-high risk.** Prohibit longline fishing within the breeding season of the main albatross and petrel species (September to April). Ensure strict compliance with Conservation Measure 25-02.	• Argentina (CCAMLR-XXII/19) proposes to fish from 1 May to 31 August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. Proposal does not conflict with advice provided.
58.5.2 east of 79°20'E	4	**Average-to-high risk.** Prohibit longline fishing within the breeding season of the main albatross and petrel species (September to April). Ensure strict compliance with Conservation Measure 25-02.	• Argentina (CCAMLR-XXII/20) proposes to fish from 1 December 2003 to 30 November 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. Proposal does not conflict with advice provided.

(continued)

Area	Risk Scale	IMAF Risk Assessment	Notes
58.5.2	4	**Average-to-high risk.** Prohibit longline fishing within the breeding season of the main albatross and petrel species (September to April). Ensure strict compliance with Conservation Measure 25-02.	• Namibia (CCAMLR-XXII/29) proposes to fish from 1 December 2003 to 30 November 2004. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 29/XVI (sic) (25-02) or other measures determined by CCAMLR, noting that some variation to the application of paragraph 3 (night-setting requirement) has been previously allowed in Subarea 88.1 (Conservation Measure 24-02). Proposal conflicts with advice provided with respect to the length of fishing season. • Namibia (CCAMLR-XXII/28) proposes to fish from 1 December 2003 to August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Namibian observer. Intends to comply with Conservation Measure 29/XVI (sic) (25-02). Proposal conflicts with advice provided with respect to fishing season. • The USA (CCAMLR-XXII/41) proposes to fish during a season to be established at CCAMLR-XXII. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02. Proposal does not conflict with advice provided.
58.6	5	**High risk.** Prohibit longline fishing during the main albatross and petrel breeding season (i.e. September to April); ensure strict compliance with Conservation Measure 25-02.	• Argentina (CCAMLR-XXII/15) proposes to fish from 1 December 2003 to 30 November 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. Proposal conflicts with advice provided with respect to fishing season. • South Africa (CCAMLR-XXII/39) proposes to fish during a season to be established at CCAMLR-XXII. States its acceptance of IMAF assessments and intent to comply with Conservation Measure 25-02 and Conservation Measure 41-09, paragraph 19. Proposal does not conflict with advice provided.

(continued)

Area	Risk Scale	IMAF Risk Assessment	Notes
58.7	5	**High risk.** Prohibit longline fishing during the main albatross and petrel breeding season (i.e. September to April); ensure strict compliance with Conservation Measure 25-02.	• Argentina (CCAMLR-XXII/15) proposes to fish from 1 December 2003 to 30 November 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. Proposal conflicts with advice provided with respect to fishing season. • Namibia (CCAMLR-XXII/29) proposes to fish from 1 December 2003 to 30 November 2004. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 29/XVI (sic) (25-02) or other measures determined by CCAMLR, noting that some variation to the application of paragraph 3 (night-setting requirement) has been previously allowed in Subarea 88.1 (Conservation Measure 24-02). Proposal conflicts with advice provided with respect to the length of fishing season.
88.1	3	**Average risk overall. Average risk in northern sector (*D. eleginoides* fishery), average-to-low risk in southern sector (*D. mawsoni* fishery).** Longline fishing season limits of uncertain advantage. Ensure strict compliance with Conservation Measure 25-02 as a seabird by-catch precautionary measure. Fishing during daytime should only be permitted under the provisions currently prescribed under Conservation Measure 24-02. In addition, vessels that catch a total of three (3) birds shall revert to night setting.	• Argentina (CCAMLR-XXII/21) proposes to fish from 1 December 2003 to 31 August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. Proposal does not conflict with advice provided. • Japan (CCAMLR-XXII/26) proposes to fish from 1 December 2003 to 31 August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02, noting that some variation to the application of paragraph 3 (night-setting requirement) has been previously allowed in Subarea 88.1 (Conservation Measure 24-02). Proposal does not conflict with advice provided. • The Republic of Korea (CCAMLR-XXII/27) proposes to fish during a season to be established at CCAMLR-XXII. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02 'with some relaxation'. Proposal may not conflict with advice provided, but there is insufficient information to assess. Note that Conservation Measure 41-09 requires the appointment of two observers to each vessel.

(continued)

Area	Risk Scale	IMAF Risk Assessment	Notes
88.1 (continued)			• Namibia (CCAMLR-XXII/29) proposes to fish from 1 December 2003 to 30 November 2004. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 29/XVI (sic) (25-02) or other measures determined by CCAMLR, noting that some variation to the application of paragraph 3 (night-setting requirement) has been previously allowed in Subarea 88.1 (Conservation Measure 24-02). Proposal does not conflict with advice provided. Note that Conservation Measure 41-09 requires the appointment of two observers to each vessel. • New Zealand (CCAMLR-XXII/33) proposes to fish from 1 December 2003 to 31 August 2004. Two scientific observers, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation; 24-hour observer coverage proposed. A variation to Conservation Measure 25-02 is sought consistent with the approaches approved by CCAMLR in Conservation Measure 41-09, paragraphs 8 and 9 (minimum line-sink rate of 0.3 m/s, three-bird limit for daylight setting; no offal discharge). New Zealand again proposes that this variation be subject to the provisions of Conservation Measure 24-02 relating to experimental line-weighting trials. Proposal does not conflict with advice provided. The proposal to conduct integrated line-weighting trials including a variation to Conservation Measure 25-02 subject to the conditions outlined in WG-FSA-03/17, does not conflict with advice provided. • Norway (CCAMLR-XXII/51) proposes to fish during a season to be established at CCAMLR-XXII. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02. Proposal conflicts with advice provided in that Conservation Measure 41-09 requires the appointment of two observers to each vessel. • Russia (CCAMLR-XXII/6) proposes to fish from 1 December 2003 to 31 August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Russian observer, with 24-hour observer coverage. Intends to comply with Conservation Measure 25-02 north of 65°S. Seeks approval to set during daylight hours south of 65°S through achieving a sink rate of at least 0.3 m/s (as specified in Conservation Measures 24-02). Proposal does not conflict with advice provided.

(continued)

Area	Risk Scale	IMAF Risk Assessment	Notes
88.1 (continued)			• South Africa (CCAMLR-XXII/39) proposes to fish during a season to be established at CCAMLR-XXII. States its acceptance of IMAF assessments and intent to comply with Conservation Measure 25-02 and restrictions in Subarea 88.1 as per Conservation Measure 41-09, paragraph 19. Proposal does not conflict with advice provided. • Spain (CCAMLR-XXII/7) proposes to fish during a season to be established at CCAMLR-XXII. Intends to comply with Conservation Measures 25-02, 41-04 and 41-09. Proposal does not conflict with advice provided. • The UK (CCAMLR-XXII/40) proposes to fish from 1 December 2003 to 31 August 2004. Two scientific observers on each vessel are proposed, including one appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measures 24-02, 25-02 and 41-09. Proposal does not conflict with advice provided. • Ukraine (CCAMLR-XXII/36) proposes to fish from 1 December 2003 to 31 August 2004. Two scientific observers on each vessel are proposed, including one appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02 but seek a variation to permit daylight setting of lines in high latitudes after meeting the requirements of Conservation Measure 24-02. Proposal does not conflict with advice provided. • Uruguay (CCAMLR-XXII/42) proposes to fish from 1 December 2003 to 31 August 2004. Two scientific observers on each vessel are proposed, including one appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02. Proposal does not conflict with advice provided. • The USA (CCAMLR-XXII/41) proposes to fish during a season to be established at CCAMLR-XXII. Provision of one scientific observer on each vessel is proposed to be appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02. Proposal does not conflict with advice provided. Note that Conservation Measure 41-09 requires the appointment of two observers to each vessel, and the US delegate confirmed intent to meet this requirement for each vessel.

(continued)

Area	Risk Scale	IMAF Risk Assessment	Notes
88.2	1	**Low risk.** No obvious need for restriction of longline fishing season. Ensure strict compliance with Conservation Measure 25-02 as a seabird by-catch precautionary measure. Fishing during daytime should only be permitted under the provisions currently prescribed under Conservation Measure 24-02. In addition, vessels that catch a total of three (3) birds shall revert to night setting.	• Argentina (CCAMLR-XXII/21) proposes to fish from 1 December 2003 to 31 August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. • The Republic of Korea (CCAMLR-XXII/27) proposes to fish during a season to be established at CCAMLR-XXII. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02 'with some relaxation'. Proposal may not conflict with advice provided, but there is insufficient information to assess. Note that Conservation Measure 41-10 requires the appointment of two observers to each vessel. • Namibia (CCAMLR-XXII/29) proposes to fish from 1 December 2003 to 30 November 2004. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 29/XVI (sic) (25-02) or other measures determined by CCAMLR, noting that some variation to the application of paragraph 3 (night-setting requirement) has been previously allowed in Subarea 88.1 (Conservation Measure 24-02). Proposal does not conflict with advice provided. Note that Conservation Measure 41-10 requires the appointment of two observers to each vessel. • New Zealand (CCAMLR-XXII/33) proposes to fish from 1 December 2003 to 31 August 2004. Two scientific observers, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation; 24-hour observer coverage proposed. A variation to Conservation Measure 25-02 is sought consistent with the approaches approved by CCAMLR in Conservation Measure 41-09, paragraphs 8 and 9 (minimum line sink rate of 0.3 m/s, three-bird limit for daylight setting, no offal discharge). New Zealand again proposes that this variation be subject to the provisions of Conservation Measure 24-02 relating to experimental line-weighting trials. Proposal does not conflict with advice provided. The proposal to conduct integrated line-weighting trials including a variation to Conservation Measure 25-02 subject to the conditions outlined in WG-FSA-03/17, does not conflict with advice provided.

(continued)

Area	Risk Scale	IMAF Risk Assessment	Notes
88.2 (continued)			• Norway (CCAMLR-XXII/51) proposes to fish during a season to be established at CCAMLR-XXII. One scientific observer on each vessel is proposed, appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02. Proposal conflicts with advice provided in that Conservation Measure 41-10 requires the appointment of two observers to each vessel. • Russia (CCAMLR-XXII/6) proposes to fish from 1 December 2003 to 31 August 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Russian observer, with 24-hour observer coverage. Intends to comply with Conservation Measure 25-02 north of 65°S. Seeks approval to set during daylight hours south of 65°S through achieving a sink rate of at least 0.3 m/s (as specified in Conservation Measure 24-02). Proposal does not conflict with advice provided. • South Africa (CCAMLR-XXII/39) proposes to fish during a season to be established at CCAMLR-XXII. States its acceptance of IMAF assessments and intent to comply with Conservation Measure 25-02 and restrictions in Subarea 88.1 as per Conservation Measure 41-09, paragraph 19. Proposal does not conflict with advice provided. • Ukraine (CCAMLR-XXII/36) proposes to fish from 1 December 2003 to 31 August 2004. Two scientific observers on each vessel are proposed, including one appointed in accordance with the CCAMLR Scheme of International Scientific Observation. Intends to comply with Conservation Measure 25-02 but seek a variation to permit daylight setting of lines in high latitudes after meeting the requirements of Conservation Measure 24-02. Proposal does not conflict with advice provided.
88.3	1	**Low risk.** Restrictions on timing of longline fishery probably inappropriate. Ensure strict compliance with Conservation Measure 25-02 at least until further data on seabird–fishery interactions are available. Fishing during daytime should only be permitted under the provisions currently prescribed under Conservation Measure 24-02. In addition, vessels that catch a total of three (3) birds shall revert to night setting.	• Argentina (CCAMLR-XXII/15) proposes to fish from 1 December 2003 to 30 November 2004. Two scientific observers on each vessel are proposed, one appointed in accordance with the CCAMLR Scheme of International Scientific Observation and one Argentine observer who will record incidental mortality of seabirds. Intends to comply with Conservation Measure 25-02 or other measures determined by CCAMLR. Proposal does not conflict with advice provided.

Table 6.10: Seabird mortality and live capture by species, recorded by observers in the CCAMLR Convention Area over the last three seasons. DIC – grey headed albatross; DIM – black-browed albatross; PRO – white-chinned petrel; PDM – great-winged petrel; PWD – Antarctic prion; DAC – cape petrel; PYD – Adélie penguin; PTZ – unidentified petrel; MAI – southern giant petrel: PWX – unidentified prion; UNK – unidentified bird. Data from 1999, 2000 and 2001 are from cruise reports. Data from 2002 and 2003 are from logbook data in the CCAMLR database.

Season	Area	Vessel	Cruise Dates	Dead					Alive							
				DIC	DIM	PRO	PWD	DAC	DIC	DIM	PRO	PYD	PTZ	MAI	PWX	UNK
1999	48.3	*Zakhar Sorokin*	13/02–13/03/99		4	2					1					
2000	48.3	*Zakhar Sorokin*	27/11/99–31/01/00		4											
		Betanzos	10/12/99–2/2/00		15					5						
2001	48.3	*Argos Vigo*	1/2–10/2/01	1	25	11			1	9	12					
		Betanzos	26/11/00–26/2/01	2	21	30				7	9					
		Saint Denis		2						2						
2002	48.3	*Argos Vigo*	15/12/01–30/1/02		6	11				4	4					
		Robin M. Lee	15/12/01–15/2/02		4	15				7	18					
		In Sung Ho	31/12/01–18/2/02		3	17	1			1	17					
		Bonito	15/12/01–9/2/02		2	2				1						
		Zakhar Sorokin	20/12/01–5/2/02		3	4										
	58.5.2	*Austral Leader*	28/3–8/5/02													1
2003	48.3	*Betanzos*	7/12/02–5/3/03	1	1	13				1	10					
		Sil	16/12/02–18/1/03		3	14				1						
		In Sung Ho	31/12/02–18/1/03		3	1			1		2					
	58.5.2	*Austral Leader*	10/4–10/5/03		1	1		2								
		Southern Champion	24/1–20/3/03			1				3	1	2	1			
		Southern Champion	24/4–18/5/03		1											
		Southern Champion	4/6–15/7/03											3	1	

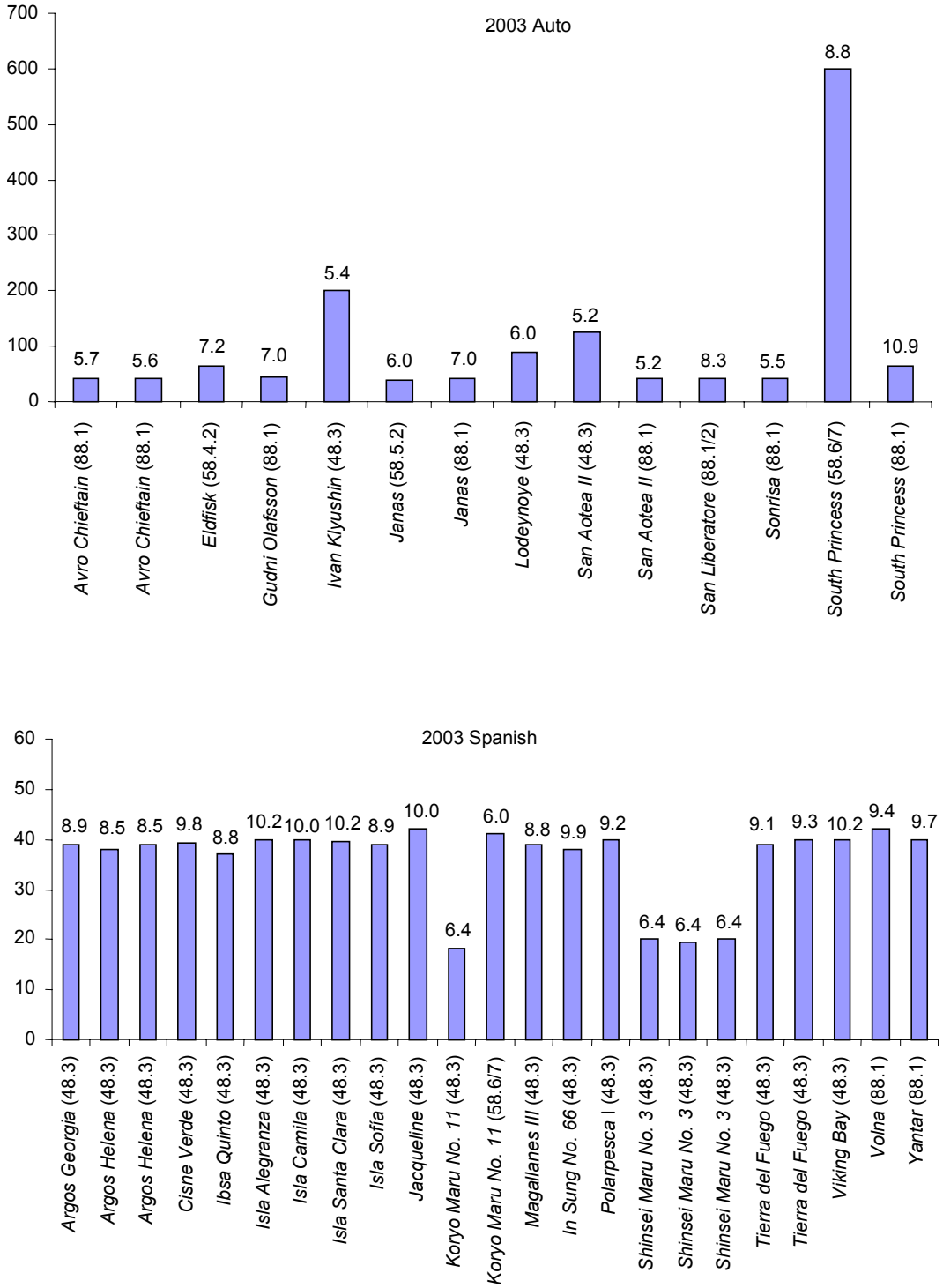

Figure 6.1: Longline weight spacing (y-axis in metres) and weights used (kilograms) by Spanish and autoline systems during the 2003 season.

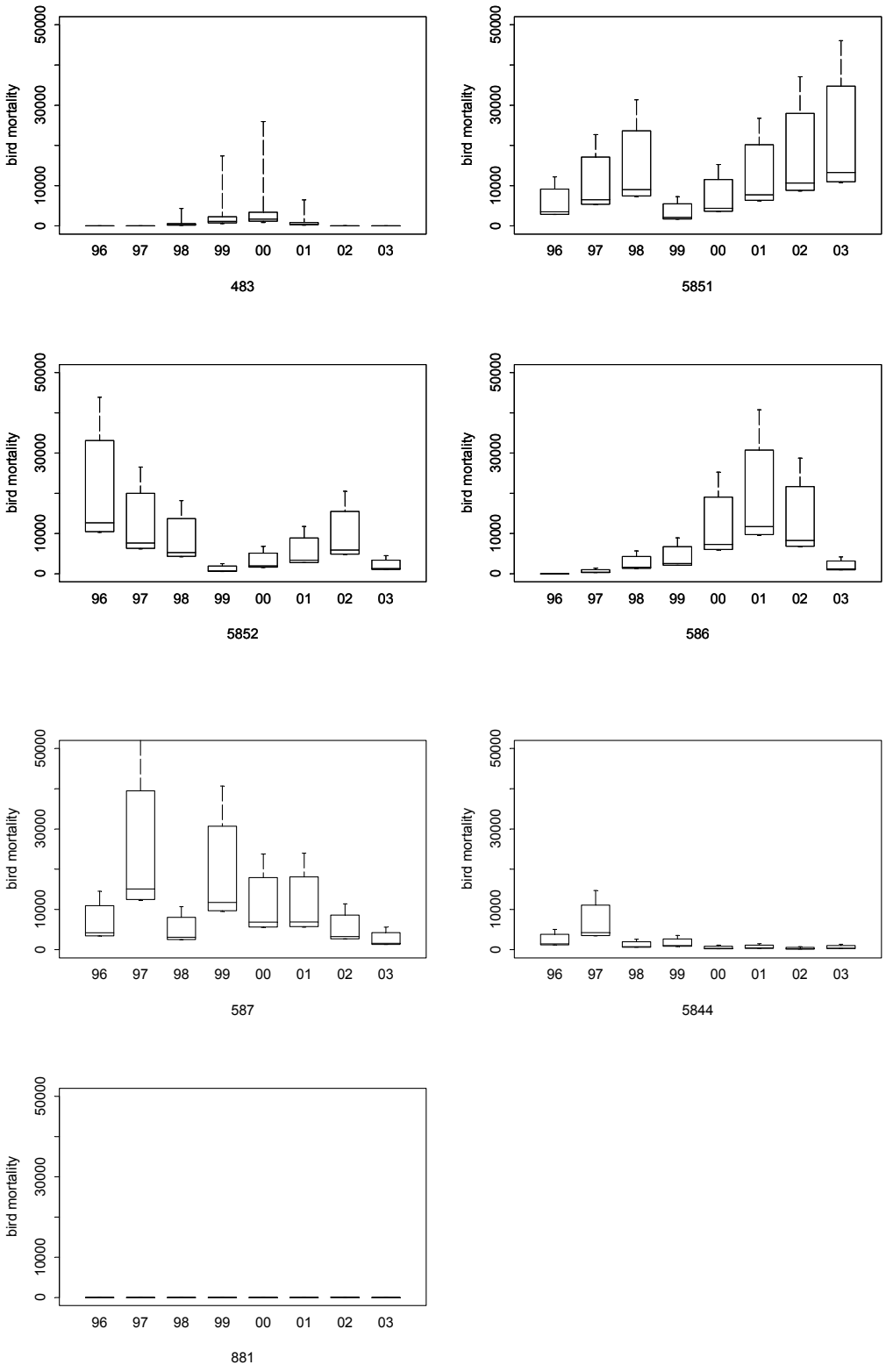

Figure 6.2: Box plots of estimates of potential by-catch of seabirds caught in the IUU fisheries in different subareas and divisions of the Convention Area from 1996 to 2003. Values shown are median, with interquartiles and upper and lower ranges.