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 ARISING FROM LONGLINE FISHING

Intersessional Work of Ad Hoc WG-IMALF

7.1 The Secretariat reported on the intersessional activities of ad hoc WG-IMALF according to the agreed plan of intersessional activities for 2000/01 (SC-CAMLR-XIX, Annex 5, Appendix D). The report contained records of all activities planned and their results. These were reviewed and appropriate details appear in the 2001/02 plan of intersessional activities of WG-IMALF (Appendix F).

7.2 The Working Group noted the extensive work accomplished intersessionally by ad hoc WG-IMALF, details of which were presented in a number of tabled papers. The Working Group thanked the Science Officer for his work on the coordination of IMALF 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 2000/01 fishing season.

7.3 The Working Group concluded that most tasks planned for 2000/01 had been successfully implemented. In reviewing the report, it noted that responses from Members had been poor to requests concerning information on population, genetics and foraging data for albatrosses and petrels, particularly in the format requested. The response to the standing request on national research programs had also been poor and all Members were asked to provide both reports in full next year.

7.4 The Working Group also noted the lack of response to a number of standing requests to technical coordinators of scientific observation programs, in particular, on the development and use of fisheries-related methods for the avoidance of incidental mortality of seabirds. The Working Group urged all technical coordinators to respond to such requests, even if they are unable to report progress.

7.5 The Working Group noted the continuing absence of any feedback on the use on board longline vessels of the book *Identification of Seabirds of the Southern Ocean*, published jointly by CCAMLR and New Zealand in 1999. The Secretariat reported a continued demand for the book from many CCAMLR Members. For this reason the book has already been reprinted in English. Mr Smith advised that crews of fishing vessels had expressed interest in having the book on board. Scientific observers nominated by New Zealand regularly used the book at sea in conjunction with their national bird identification field guide.

7.6 The Working Group welcomed a report from Brazil of the planned publication of educational material based on the CCAMLR book *Fish the Sea Not the Sky*.

7.7 The membership of ad hoc WG-IMALF was reviewed. The updated list of members has been placed on the CCAMLR website (Scientific Committee → Fisheries Interaction → Membership). The Working Group especially welcomed Ms Rivera who attended the meeting for the first time. However the Working Group noted that some CCAMLR Member countries which are involved in longline fishing and/or seabird research in the Convention Area (e.g. Chile, France, European Community, Ukraine and Uruguay) were not, or were still not, represented at meetings of ad hoc WG-IMALF. Members were asked to review their representation on WG-IMALF intersessionally, to suggest additional members and to facilitate the attendance of their representatives at the meetings.

Research into the Status of Seabirds

7.8 Following last year's request for information summarising national research on seabirds (albatrosses and *Macronectes* and *Procellaria* petrels) vulnerable to longline fisheries interactions, papers were presented by the USA (WG-FSA-01/36), France (WG-FSA-01/41), Australia (WG-FSA-01/47), UK (WG-FSA-01/67) and New Zealand (WG-FSA-01/77). Reference to research on albatrosses by South Africa is included in WG-FSA-01/10, 01/11, 01/12 and 01/14. Of the countries known to be conducting relevant research on these species, no reports were received from Argentina and Chile.

7.9 All Members were requested to table annual updates on the current status of relevant research programs to next year's meeting of the Working Group.

7.10 Previously it was noted that the information regarding seabird population dynamics and foraging ranges was insufficient for comparisons with levels of by-catch and fishing effort. Consequently Members were requested to provide additional detail to enable these important assessments (SC-CAMLR-XIX, Annex 5, paragraphs 7.10 and 7.11). A proforma of the information requested was circulated intersessionally. The UK and Australia were the only Members to provide the information requested, although New Zealand provided additional information on their albatross population research programs.

7.11 The information provided is summarised in Tables 49 and 50, which update Table 47 in SC-CAMLR-XIX, Annex 5. All Members were requested to provide the details of population dynamics studies and foraging ranges as requested last year. Complete submission of the population and foraging research proformas to next year's meeting of the Working Group will enable a timely and comprehensive review of the level of information available for each population.

7.12 The most recent assessments (using the IUCN criteria) of the global status of albatrosses, giant petrels and *Procellaria* petrels are included in Table 49 as extracted from the information contained in WG-FSA-01/55. Given the population trends for some species, the status assessments are likely to require revision.

7.13 Of particular relevance to CCAMLR is a current application to IUCN (via BirdLife International) to upgrade the status of the black-browed albatross from Near-Threatened to Vulnerable. This reassessment is based on recent data from the Falkland/Malvinas Islands (which contain 70% of the world population), where it is estimated that the breeding population has declined by 25% (from 506 000 to 382 000 pairs) over the last 20 years. In the last five years this population has declined from 468 000 to 382 000 pairs, a decrease of 18% (Huin, 2001).

7.14 To enable revisions of the status of albatross and petrel populations vulnerable to fishery-related mortality in the Convention Area, Members are required to provide information on the most recent assessment of population size (year and population size estimate and population trend) for each population, wherever this information is available. This information should be tabled at next year's meeting of the Working Group.

7.15 A review of population trends of albatrosses and petrels at Marion Island (WG-FSA-01/11) illustrates the requirement for timely review of trends of vulnerable populations. The authors report on the dramatic recent population declines of five species

(wandering and grey-headed albatrosses, northern and southern giant petrels, and white-chinned petrels). The albatross and giant petrel populations were all stable or decreasing during the 1980s, prior to a recovery period during the early 1990s. The population recoveries have subsequently halted or reversed in all four of these species. Wandering albatrosses increased in numbers steadily between 1990 and 1997, after which the population has decreased at -8.2% p.a. The grey-headed albatross population has been variable during the 1990s but the 1999/2000 data showed a 28% decrease from the previous season. The late 1990s also showed dramatic declines for both northern giant petrels (-11.3% p.a. since 1997) and southern giant petrels (-14.6% p.a. since 1995). White-chinned petrels have been monitored annually since the 1996/97 season, during which time the population has decreased by an alarming 34%, at an annual rate of -14.1%. Continued monitoring is essential to determine if the recent population decreases are sustained.

7.16 The population trends of the five species at Marion Island are similar to trends of wandering albatrosses at other Indian Ocean breeding locations, suggesting a common underlying cause, possibly changes in effort in the Southern Ocean tuna fisheries. A recent increase in tuna longlining, as well as recent large-scale IUU longline fishing for *D. eleginoides* (including in areas close to the breeding grounds), are likely contributing to the recent population decreases (WG-FSA-01/11).

7.17 The results of the South Georgia research program on white-chinned petrels, reported verbally last year (SC-CAMLR-XIX, Annex 5, paragraph 7.8), were made available at the meeting (WG-FSA-01/26 Rev. 1). A decline of over 28% in the breeding numbers for this population between 1981 and 1998 was attributed to changes in the marine environment, particularly relating to incidental mortality in longline fisheries. The results of analyses of the foraging range of white-chinned petrels breeding at South Georgia (WG-FSA-01/25) confirmed that they are amongst the most wide ranging of seabirds (travelling 3 000 to 8 000 km between incubation bouts). This wide-ranging dispersal places this population at substantial risk of high mortality rates in Southern Ocean longline fisheries, both in waters within, and adjacent to, the Convention Area. Importantly for by-catch considerations, this study also confirmed that nocturnal and diurnal activity of this species was approximately equal.

7.18 Tristan albatrosses, breeding only on the Gough and Tristan da Cunha group of islands, are the most genetically distinct of the wandering albatross complex, and are currently listed as Endangered. WG-FSA-01/14 provided data on population demographic parameters, including age at return to the island (4–5 years of age), modal age of first breeding (8 years), and average breeding success (63% in 1999/2000). The study reports that of the nine birds recovered away from the island, at least four were killed by longline fishing. Despite mortality on longlines, the authors suggest that the population may not have declined dramatically since the early 1980s and that its Threatened status might be revised to Vulnerable. The Working Group, however, felt that more caution may be warranted for this, the third rarest of all albatross species, given the lack of repeatable surveys to date, the small size of the annual breeding population (<1 200 pairs) and the restricted number of breeding sites (essentially one).

7.19 With the exception of the satellite tracking studies of the Macquarie Island albatrosses and the survey of Tristan albatrosses, no research programs focussing on relevant populations have been initiated since 1999. Assessments of population size and trends of many populations and species affected by longline fishing remain absent. The most detailed studies

are for *Diomedea* albatrosses, with considerably less known for *Thalassarche*, *Phoebetria*, *Macronectes* and *Procellaria* species (in that order). It is unfortunate that, of all the species killed on longlines in southern waters, our understanding of the population size, trends and foraging ranges are most deficient for white-chinned petrels, the species most commonly killed in the Convention Area.

7.20 A summary of foraging distributions as determined by satellite tracking was attempted to enable an assessment of the foraging ranges of affected populations (at different times of year and stages of the breeding cycle), adequate to assess overlap with areas used by longline fisheries, and ultimately, to compare at-sea distributions with data on fishing effort (Table 50). Incomplete provision of information prevented the completion of this task. Compilation of the CCAMLR areas prospected by the different populations, with an indication of level of use, will enable better estimates of ranges of relevance to regional risk assessments (see SC-CAMLR-XX/BG/11).

7.21 In respect of the deficiencies resulting from the lack of relevant research into population dynamics and foraging ecology of most populations, little has changed since last year (SC-CAMLR-XIX, Annex 5, paragraph 7.10). If sufficient information is provided to the Working Group next year, it should be possible to provide assessments of the state of knowledge at a population level.

7.22 The foraging interactions between wandering albatrosses breeding on Marion Island and longline fisheries in the southern Indian Ocean were explored in WG-FSA-01/10. Adults tracked during the summer months showed affinity to mesoscale oceanographic features, as well as seasonal and gender differences in foraging behaviours. During the shorter foraging trips made during chick rearing, the authors noted a greater spatial overlap with the local *D. eleginoides* fishing area, as well as an increased reliance on offal produced by these vessels. During 1997 almost 60% of samples contained fisheries-related items (offal and fisheries litter). Fisheries-related debris observed to occur in the regurgitates from chicks has increased significantly, occurring in 25% of the samples collected in 1997. The most frequently occurring pollutants derived from fisheries were toothfish hooks (17% of samples) and rope nooses used when processing toothfish (8% of samples). Consistent with other populations of this species, the females foraged both further afield and in more northern waters. Although this population is exposed to a wide range of longline fisheries, the authors suggest that it is the mortality experienced by adult females in more temperate tuna fisheries which is the single most important factor compromising the conservation status of this population. The Working Group, however, noted with alarm the increasing incidence of toothfish hooks in regurgitates and were seriously concerned about the combined impact of fisheries on this population.

7.23 In 1999 and 2000 the Working Group requested information from Members on genetic research relevant to determining the provenance of birds killed in longline fisheries. Despite the knowledge that relevant studies have been conducted in Australia, New Zealand, South Africa, UK and the USA, detailed information was only provided by the UK. All other Members were again requested to supply relevant information on their research.

7.24 The results of research on population genetics of black-browed and grey-headed albatrosses (WG-FSA-01/19) are extremely relevant to the characterising of the profiles of these species, as well as to the ability to ascribe provenance to by-catch samples. Black-browed albatrosses form three distinct groups: Falklands/Malvinas; Diego Ramirez,

South Georgia and Kerguelen; and Campbell Island (*Thalassarche impavida*). *T. melanophrys* from Campbell Island contain genetic markers from all of the three groups, indicating high levels of mixture and hybridisation. In contrast, grey-headed albatrosses form one globally panmictic population. Ability to ascribe provenance for this species is therefore limited at present.

7.25 In recognition of the importance of validating the species of birds killed, as well as determining their sex, age, and where possible provenance, scientific observer logbooks were modified in 1996 to require an entry indicating the place of deposition and the scientists responsible for the material (SC-CAMLR-XV, Annex 5, paragraph 7.20).

7.26 The Working Group felt it was now appropriate to assess the number and location of specimens and samples retained from seabird by-catch. It requested the Secretariat to correspond with the scientists responsible in order to obtain summary data on the number and nature of specimens in their collections.

7.27 WG-FSA-01/18 reported the results of relating population data for wandering albatrosses at South Georgia and the Crozet Islands to longline effort data for tuna fisheries south of 30°S. The model from this paper predicted reasonably closely the observed data from the Crozet Islands, but the fit to the South Georgia population was substantially poorer. This probably reflects:

(i) greater overlap in the Indian Ocean than in the Atlantic Ocean between the main areas of tuna longline fishing and the foraging ranges of wandering albatrosses from the Crozet Islands and South Georgia respectively; and

(ii) greater impact of poorly documented longline fisheries, especially the tuna fisheries in the South Atlantic and the *D. eleginoides* fisheries (outside the CCAMLR Convention Area) within the foraging range of wandering albatrosses from South Georgia.

7.28 The model results suggest that the marked decline in both populations (late 1960s to c. 1986), and subsequent recovery of the Crozet Islands population (but not the continued decline of the South Georgia population), can be explained by the tuna longline by-catch. The model indicates that populations may be able to sustain some level of incidental mortality. However, the likely under-reporting of fishing effort (especially in non-tuna longline fisheries) and the delicate balance between a sustainable level of by-catch for these long-lived populations suggest great caution in any such application of the findings.

7.29 The Working Group commended this initiative, involving collaboration between Australian, UK and French scientists, which addressed issues of particular interest to CCAMLR. The results had a direct bearing on the question, posed by the Scientific Committee last year, as to the potential impact of longline fishing (including IUU fishing) on albatross populations in the Convention Area (see SC-CAMLR-XIX, paragraph 4.29).

7.30 The Working Group noted that although the approach in WG-FSA-01/18 could be refined by using recently available data on the distribution of effort within the foraging range of wandering albatrosses, the deficiencies noted above in the fishing effort data made it unlikely that significant improvements in model fit would result.

7.31 Given that the albatross data used in this study came from the most detailed and longest-running studies worldwide and that fishing effort data for tuna longline fisheries are relatively well documented by the standards of international waters fisheries, the Working Group noted the inevitable limitations for other attempts to establish causal relationships between incidental mortality in longline fisheries and responses by albatross populations in the Convention Area. The study also indicated that attempts to correlate seabird population changes with fishing effort are likely to be limited by the quality of the latter data. This is likely to be particularly true in respect of data for IUU fishing, despite the very large seabird by-catches potentially involved.

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

2001 Data

7.32 Data were available from 38 longline cruises conducted within the Convention Area during the 2000/01 season (for details see WG-FSA-01/21; Tables 12 and 51).

7.33 The Working Group noted that the average proportion (percentage with range in parentheses) of hooks observed was similar to last year (SC-CAMLR-XIX, paragraph 7.28), except in Subarea 88.1 where it was 23% higher, viz: Subarea 48.3 – 24 (10–81); Subareas 58.6/58.7 – 39 (6–61); Subarea 88.1 – 56 (37–89).

7.34 There were still concerns that the proportions of hooks observed on some vessels/cruises were unacceptably low (e.g. *Isla Graciosa* (6% and 8%) and *No. 1 Moresko* (10% on second cruise)).

7.35 WG-FSA-01/40 indicated that when bird catches are at low levels, it does not necessarily follow that increased observer coverage will increase the accuracy of bird by-catch estimates. The paper showed that when scientific observer coverage is about 20%, the absolute level of confidence intervals attached to estimates of mean bird catch are low when catch rates are less than 0.01 birds/thousand hooks (c. 8 birds per vessel per 100 days fishing). As a result, efforts to increase observer coverage beyond c. 20% should be balanced against perceived gains in the absolute accuracy of bird by-catch estimates rather than gains in the relative (CV) accuracy.

7.36 Problems with incorrect reporting of the proportions of hooks observed were much reduced compared with last year (SC-CAMLR-XIX, paragraph 7.29), with only the values for *Polarpesca I* (81%) and *Isla Gorriti* (89%) giving cause for concern.

7.37 The total observed catch rate was calculated using the total number of hooks observed and the total seabird mortality observed (Table 51). The estimated total catch of seabirds by vessel was calculated using the vessel's observed catch rate multiplied by the total number of hooks set.

Subarea 48.3

7.38 The overall catch rate of birds killed in Subarea 48.3 was 0.002 birds/thousand hooks, essentially the same as last year. All birds were killed during night setting; that no birds were killed during day setting presumably reflects the very small proportion (c. 5%) of sets starting in daylight.

7.39 The total estimated seabird mortality in Subarea 48.3 was 30 birds (Table 52), compared with 21 last year. Of the six birds observed killed, three were southern giant petrels, two were black-browed albatrosses and one was a cape petrel (Table 53).

South African EEZs in Subareas 58.6 and 58.7

7.40 For Subareas 58.6 and 58.7, the overall observed catch rate of birds killed was 0.018 birds/thousand hooks from 11 fishing voyages (Table 51). The night-time rate was lower (0.014 birds/thousand hooks) than during the day (0.037 birds/thousand hooks). The catch rate was slightly less than the previous year (0.022 birds/thousand hooks).

7.41 The total estimated seabird mortality in Subareas 58.6 and 58.7 for this year was 199 seabirds (Table 54), a marked decrease from the 516 estimated killed in the previous year. The white-chinned petrel was, as in previous years, the most commonly observed of three species reported killed, comprising 92% of the total observed mortality, with black-browed albatross and grey petrel each comprising 4% (Table 53).

7.42 Further analysis of seabird by-catch in the South African EEZ around the Prince Edward Islands in 2000/01 was presented in WG-FSA-01/61. This paper reported on observer data from 12 fishing voyages, eight of which were also included in the Secretariat's report (WG-FSA-01/21), setting a total of 8.07 million hooks. A total of 76 birds of six species was reported killed, substantially less than the 268 reported in the previous season. Most birds reported killed were white-chinned petrels (86%), with very small numbers of grey-headed and black-browed albatrosses, giant petrels, grey petrels and macaroni penguins (*Eudyptes chrysolophus*).

7.43 The average catch rate was 0.009 birds/thousand hooks, considerably lower than in the previous season (0.036), and also lower than in three earlier seasons (1998/99 (0.016), 1997/98 (0.117) and 1996/97 (0.289)). Catch rate per voyage varied from zero to 0.046 birds/thousand hooks. Most birds were killed during the summer months.

7.44 Most birds killed were hooked on the wing or body during setting. A total of 81 birds was released alive after being caught during hauling, mainly white-chinned petrels and southern giant petrels. This is an increase from 17 in 1999/2000 and was thought to be due to increased observer vigilance.

7.45 The observed reduction in bird mortality is thought to be due to vessels targeting seamounts at a distance from and to the west of the Prince Edward Islands where fewer birds were present.

7.46 The Working Group noted differences between WG-FSA-01/21 and 01/61 which reflected that:

(i) as in the previous season, WG-FSA-01/61 included reports of dead birds not directly recorded by the observer, resulting in higher by-catch totals; and

(ii) only eight fishing voyages were common to the two datasets. Three recent voyages covered by WG-FSA-01/21 were not available to the authors of WG-FSA-01/61 at the time of writing.

7.47 WG-FSA-01/8 reviewed seabird by-catch around the Prince Edward Islands over the four-year period 1996 to 2000. Observers were present on all but two of 52 voyages by 12 vessels.

7.48 During this period, the annual by-catch rate decreased from 0.19 birds/thousand hooks to 0.034 birds/thousand hooks. White-chinned petrels were the most frequently killed species (80% of 1 761) over the period, with albatrosses, particularly grey-headed albatrosses, being killed in numbers only in the first year. Improved compliance with CCAMLR regulations and an increasing distance of fishing from the islands were thought responsible for the reduction in by-catch over time.

7.49 Birds were caught almost exclusively during their breeding seasons, primarily during the austral summer. Mortality of white-chinned petrels was almost exclusively restricted to the months of October to April from 1996 to 2000. Most birds killed were breeding adult males, assumed to be from the Prince Edward Islands. Albatrosses were caught closer to the islands than white-chinned petrels. Most petrels were foul-hooked, whereas albatrosses were mainly hooked by their bills.

7.50 WG-FSA-01/8 estimated that about 7 000 seabirds were killed around the Prince Edward Islands from 1996 to 2000, when the estimated numbers of birds killed by IUU fishing (5 239 birds) were added to those killed by the regulated fishery (1 761 birds). This level of mortality was considered to have had significant impacts on the breeding populations of several species of albatrosses and petrels at the islands (see WG-FSA-01/11).

7.51 The Working Group recollected its recommendation of the two previous years (SC-CAMLR-XVIII, Annex 5, paragraph 7.46 and SC-CAMLR-XIX, Annex 5, paragraph 7.44) to prohibit fishing within 200 n miles of the Prince Edward Islands during the months of January to March inclusive, especially to reduce further by-catch of the summer-breeding white-chinned petrel.

7.52 In view of information provided by South Africa (paragraphs 7.12 and 7.47 to 7.50) on timing of mortality of white-chinned petrels, the Working Group recommended that fishing within 200 n miles of the Prince Edward Islands be prohibited in the months of September to April inclusive, in line with its advice for all other areas of the highest risk of seabird incidental mortality. However, if South Africa still considered it necessary to maintain a regulated fishing presence within its EEZ around the Prince Edward Islands in order to deter IUU fishing (WG-FSA-01/8), then regulated fishing within 200 n miles of the islands (which would include the seamounts to the west) should be prohibited at least from January to April.

Subarea 88.1

7.53 No incidental mortality of seabirds was observed in Subarea 88.1. The only bird caught (by *San Aotea II*) apparently came on board independently of the longlining operation and was released alive.

General

7.54 Table 55 summarises data on seabird by-catch and by-catch rates for the last five years (1997–2001), for the best documented subareas. There has been no seabird by-catch in the new and exploratory longline fishery in Subarea 88.1 in the three years (1999–2001) since this fishery commenced.

7.55 In Subarea 48.3, by-catch rate and estimated total seabird by-catch were, for the second successive year, at negligible levels. This has been achieved in large part by restricting fishing to winter months, but consistently improving compliance with Conservation Measure 29/XIX, particularly in respect of night setting and line weighting in 2000/01.

7.56 In the fisheries within the South African EEZ in Subareas 58.6 and 58.7, the by-catch rate in 2000/01 was the lowest yet reported (an order of magnitude lower than in 1997/98) and the total estimated seabird by-catch is, at 199 birds, close to the lowest total ever (156 birds in 1998/99). The improvements this year are due in part to improved compliance with Conservation Measure 29/XIX, but also to vessels targeting areas further from and to the west of the Prince Edward Islands where fewer seabirds occur (paragraph 7.45).

1999 and 2000 Data

French EEZs in Subarea 58.6 and Division 58.5.1

7.57 Information on seabird by-catch from within its EEZs around the Crozet (Subarea 58.6) and Kerguelen (Division 58.5.1) Islands was supplied by France for 1998/99 and 1999/2000 (WG-FSA-01/21, Appendix 1). A total of 11.57 million hooks was set in the two years.

7.58 The Working Group welcomed this information, coming as it does from areas identified as being of the highest risk for seabird mortality (SC-CAMLR-XX/BG/11), and also because such information had not been provided to CCAMLR for several years. However, it noted that the data had not been supplied in the standard format and that none of the original data had been submitted to the CCAMLR database as requested (SC-CAMLR-XIX, paragraph 4.22). In addition, the lack of information on mitigation measures in use in this fishery made interpretation difficult.

7.59 The data presented revealed most alarming by-catch rates, reaching as high as 8.584 birds/thousand hooks in one month, when no less than 3 226 birds were killed around Kerguelen. Overall, by-catch rates were 0.736 birds/thousand hooks for 1998/99 and 0.184 birds/thousand hooks for 1999/2000 for Crozet Islands and 2.937 birds/thousand hooks

for 1998/99 and 0.304 birds/thousand hooks for 1999/2000 for the Kerguelen Islands. The reason for the reduction in by-catch rate at the two island groups from 1998/99 to 1999/2000 is not known.

7.60 A total of 8 491 white-chinned petrels was reported killed. In both years and at both islands, this species formed over 99% of all birds reported killed. The few other species were nearly all albatrosses and giant petrels. More birds (6 848) were killed around the Kerguelen Islands than around the Crozet Islands (1 686).

7.61 By-catch occurred in nearly all months of fishing, which was spread over most of the year at both island groups, but levels were highest in the summer months of January to April, when white-chinned petrels are rearing chicks. However, appreciable numbers of white-chinned petrels were also killed, especially at the Kerguelen Islands, in October to December, when the species is prospecting and incubating.

7.62 The Working Group noted that the total of 2 241 birds estimated killed in the French EEZs in 1999/2000 is 4.2 times greater than the combined total (537 birds) for Subarea 48.3 (21 birds) and for the South African fishery in Subareas 58.6 and 58.7 (516 birds) for that year. Similar figures for 1998/99 are 6 293 birds estimated killed in the French EEZs, 17.2 times greater than the combined total of 366 birds estimated killed in Subarea 48.3 and by the South African fishery in Subareas 58.6 and 58.7.

7.63 The by-catch rates within the French EEZs in some cases exceeded those that are used to estimate by-catch for these areas in the IUU fishery (1.049 and 1.88 birds/thousand hooks; SC-CAMLR-XIX, Annex 5, Table 56).

7.64 It was noted that the mortality of white-chinned petrels would have been reduced from 8 491 to only 32 birds if fishing had not taken place during the eight months of high mortality during summer. The Working Group therefore recommended that longline fishing within the French EEZs should be prohibited during the months of September to April inclusive, in line with its advice for all other areas of the highest risk of seabird incidental mortality.

7.65 The Working Group requested France to supply the original data for 1999 and 2000, together with data for 2001, to CCAMLR at the earliest opportunity, together with information on by-catch mitigation measures in use in each of these three years.

Compliance with Conservation Measure 29/XIX

7.66 Compliance with this conservation measure, as set out in WG-FSA-01/22, is summarised in Table 56 in comparison with similar data from previous years, when Conservation Measures 29/XV and 29/XVI applied. The only substantive difference between Conservation Measures 29/XVI and 29/XIX is that the line weighting specification was relaxed from 6 kg at 20 m to 8.5 kg at 40 m.

Streamer Lines

7.67 This year 66% of the streamer lines deployed complied fully with the specifications in Conservation Measure 29/XIX (Table 57). In the last four years the highest compliance was 33% in 1999/2000, so this year there has been a substantial improvement. It was noted that several vessels complied fully with the streamer line specifications on some cruises but not on others. All vessels fishing in Subarea 88.1 used streamer lines that fully complied with the specifications.

7.68 Several vessels still have persistently poor compliance with this element of Conservation Measure 29/XIX (see Table 58), notably *Isla Santa Clara*, *No. 1 Moresko*, *Argos Helena*, *Aquatic Pioneer* and *Eldfisk*. It was disappointing that several vessels new to the fishery (*Polarpesca I*, *Suidor One* and *Rustava*) have failed to comply with this simple and important measure.

7.69 As in previous years the element of the conservation measure that was most commonly not met was length of streamer line. In Subareas 58.6 and 58.7 only 64% of the lines complied with the 150 m requirement and in Subarea 48.3 only 53% complied. Streamer line length in combination with height of attachment of the line both have an important bearing on the aerial length of the streamer line. Because the aerial section acts as a protection zone for seabirds, streamer line length is very important and the Working Group re-emphasised the importance of compliance with this element of the measure.

7.70 The Working Group noted that the observer reports for four vessels fishing in Subarea 48.3 did not provide full details of streamer line specifications (Table 57). It is essential that observers do this and it was recommended that the instructions to observers should emphasise this.

Offal Discharge

7.71 All vessels fishing in the Convention Area except one (*Maria Tamara* in Subarea 48.3) complied with the requirement to either hold offal on board or discharge on the opposite side to where the line is hauled and not discharge during setting. In 1999/2000 all vessels in Subareas 58.6, 58.7 and 88.1 complied with this conservation measure and in Subarea 48.3 four vessels contravened the measure so there has been a significant improvement. The case of the *Maria Tamara* is complicated by the fact that comments in the observer report are not entirely consistent with the logbook entry. This requires further investigation.

7.72 Although Conservation Measure 29/XIX calls for avoiding the discharge of offal during the haul, attempts to comply with this have been inconsistent. Thus, in Subarea 88.1 (where it is mandatory under Conservation Measure 210/XIX), no vessel discharged during the haul. In Subareas 48.3, 58.6 and 58.7, on four cruises (*Isla Camila*, *Viking Bay*, *Eldfisk*, *Isla Graciosa*), no offal was discharged during hauls; on the other 25 cruises there was discharge during hauls at an average of 91% of sets. Paradoxically, some vessels discharged at the haul on some cruises but not on others. It is not clear what factors are contributing to this.

Night Setting

7.73 In accordance with Conservation Measure 29/XIX, longline setting shall occur at night only. Daylight is defined as the period from nautical dawn through to nautical dusk. If more than 20% of the set occurs in daylight hours, it is then considered to be a daylight set.

7.74 Compliance with night setting has improved in Subarea 48.3 from 87% in 1999/2000 to 95% in 2000/01. On five cruises, no sets were made in the daytime, on 12 cruises between two and nine sets were set in the daytime and on two cruises 18 and 34 sets were made in the daytime (on *Isla Alegranza* and *RK-1* respectively).

7.75 In Subareas 58.6 and 58.7 compliance, at 78%, remained about the same as in 1999/2000 (77%). The South African Government permit conditions for the *Eldfisk* allowed this vessel to fish during the daytime if a Mustad underwater funnel was used. This vessel deployed 50%, 64% and 94% of sets at night over three cruises. The *Koryo Maru 11* deployed a significant number of sets (47%) during daylight hours on one cruise and caught the highest number of seabirds of any vessel fishing in these subareas.

7.76 Fishing in Subarea 88.1 (where only 18% of lines were set at night) operated under Conservation Measure 210/XIX which contained an exemption from night setting requirements for vessels fishing south of 65°S in order to conduct line weighting trials (see paragraph 7.80).

Line Weighting – Spanish System

7.77 In 2000 the Commission accepted WG-IMALF's recommendation for an alternative line weighting regime for vessels using the Spanish method of longline fishing. Conservation Measure 29/XIX requires vessels to use either 8.5 kg weights spaced at no more than 40 m or 6 kg weights at no more than 20 m. The addition of the option of 8.5 kg weights at no more than 40 m was made because of concern that the existing regime placed practical constraints on fishers.

7.78 Line weighting that complied with the new conservation measure was used on four (21%) cruises in Subarea 48.3 and two (18%) cruises in Subareas 58.6 and 58.7 (Figure 35). It was reported that one vessel (*Isla Alegranza*) operating a Spanish longline system in Subarea 88.1 complied with the measure, using line weighting equivalent to about 12 kg at 40 m intervals (and a setting speed of 7 knots).

7.79 Eight other vessels used a line weighting regime that was close to that required in Conservation Measure 29/XIX on at least one cruise (Figure 35). This situation compares to 1999/2000 when no vessels complied with the line weighting requirement that was in place at the time (6 kg at no more than 20 m).

7.80 The Working Group concluded from this year's results that the new alternative line weighting requirement could be complied with. It recommended to the Scientific Committee and the Commission that vessels unable to meet the line weighting requirement of Conservation Measure 29/XIX should be prohibited from fishing in the Convention Area.

Line Weighting – Autoline System

7.81 In Subarea 88.1 vessels fishing south of 65°S in daylight were required to use line weights to achieve a consistent minimum line sink rate of 0.3 m/s (Conservation Measure 210/XIX). The Working Group noted that all vessels complied with this measure.

Thawed Bait

7.82 All except three vessels (*Eldfisk*, *Ural*, *No. 1 Moresko*) complied with the requirement to use thawed bait on all occasions. This compared to last year when all but two vessels used thawed bait (WG-FSA-01/22).

General

7.83 Table 58 summarises compliance with Conservation Measure 29/XIX regarding night setting, streamer lines, line weighting and offal discharge on a vessel-specific basis.

7.84 Four vessels (*Isla Gorriti*, *Janas*, *San Aotea II* and *Sonrisa*) all complied fully with the elements of the conservation measures that were applicable in the areas they fished. The Working Group commended the efforts of these vessels and noted that these vessels were particularly suitable for involvement in new and exploratory fisheries.

7.85 Table 59 provides more detail, in an attempt to quantify performance, on the extent to which each vessel complied with each element of Conservation Measure 29/XIX in 2000/01. In addition to the vessels that fully complied with night setting, five vessels completed 95% or more of their sets at night.

7.86 Historical compliance data and reports received by CCAMLR from observers and fishers indicate that all practical constraints relating to streamer line use and line weighting have now been overcome. There is now no reason why all vessels cannot fully comply with these measures.

7.87 The Working Group therefore recommended that vessels which do not fully comply with night setting, streamer line, offal discharge and line weighting measures should be prohibited from fishing in the CCAMLR Convention Area.

7.88 It recollected that the Scientific Committee (SC-CAMLR-XIX, paragraph 4.41(i)) had made a similar recommendation last year (excluding line weighting for which the conservation measure was being modified).

7.89 Particular attention is drawn to vessels that have not complied with two or more of the elements of Conservation Measure 29/XIX for two or more consecutive years. These are: *Isla Camila*, *Isla Santa Clara*, *Koryo Maru 11*, *No. 1 Moresko*, *Argos Helena*, *Aquatic Pioneer* and *Isla Alegranza*. In addition, vessels in their first year in the fishery that failed to comply with two or more measures are *Polarpesca I*, *Suidor One*, *Maria Tamara*, *In Sung 66* and *Rutsava*.

7.90 It was noted that several vessels narrowly failed to achieve compliance with Conservation Measure 29/XIX, particularly in relation to streamer line design and night setting. It was recommended that technical coordinators be reminded of the precise specifications of these elements of the conservation measure and given encouragement to ensure that all vessels for which they have responsibility are able to comply with the stipulated provisions as a minimum. Improvements to the instructions and recording sheets for scientific observers should help to ensure comprehensive and accurate reporting on by-catch mitigating measures in use on each vessel (paragraph 7.96).

Fishing Seasons

7.91 Last year the Scientific Committee advised the Commission that once full compliance with Conservation Measure 29/XVI was achieved, together with negligible levels of seabird by-catch, any relaxation of closed seasons should proceed in a step-wise fashion (e.g. similar to the process by which the closed season was extended) and the results of this carefully monitored and reported (SC-CAMLR-XIX, paragraph 4.42).

7.92 On the basis of the data for the 2000/01 fishing season in Subarea 48.3, seabird by-catch levels were negligible, for the second successive season. However, full compliance with Conservation Measure 29/XIX was not achieved so it is not possible to recommend an extension to the fishing season for 2001/02 in Subarea 48.3.

7.93 However, the Working Group noted that full compliance would have been achieved:

(i) if the offal discharge by the *Maria Tamara* had been on the opposite side from the haul (or if she had been excluded from the fishery as recommended by the Commission (CCAMLR-XVII, paragraph 6.42(i)), or if she was configured so as to be unable to discharge on the opposite side);

(ii) with small improvements in setting of lines at night, notably by the *RK-1*, *Polarpesca I* and *Isla Alegranza*;

(iii) with relatively small improvements to the line weighting regimes of all vessels, except *Argos Georgia* and *Ural*. It was noted that the *Isla Graciosa* and *No. 1 Moresko* achieved the standard on at least one cruise and *Viking Bay* only failed to do so by 0.6 kg; and

(iv) with very minor improvements to the use and specification of streamer lines by *Argos Helena*, *Isla Camila*, *Isla Santa Clara, Polarpesca I* and *No. 1 Moresko*.

Scientific Observer Reports

7.94 In reviewing the Secretariat summaries of observations on board vessels operating in the Convention Area during the 2000/01 season (WG-FSA-01/20, 01/21 and 01/22), the following observer-related issues were noted (see also paragraphs 3.35 to 3.52).

Defining Incidental Mortality Events

7.95 One incident of seabird interaction in the longline fishery was reported as both an entanglement and an incidental capture. The Working Group noted that this type of confusion could be resolved by the development of a standard format for the written observer report.

Using Observer Data for Compliance Purposes

7.96 As the reporting of compliance with conservation measures is increasingly scrutinised, the accuracy of the data provided by observers becomes more crucial. This was highlighted in discussion of the accuracy of measurement of the length of streamer lines, and failure to report on specifications relating to certain elements of Conservation Measure 29/XIX (see paragraph 7.70) resulting in blanks in the tables in WG-FSA-01/22. The Working Group noted that observers needed to be clearly instructed by technical coordinators on the elements of conservation measures that they are reporting on.

Monitoring Line Sink Rate

7.97 CCAMLR observers reported on the implementation of Conservation Measure 210/XIX in relation to line sink rate prior to entering the Subarea 88.1 exploratory fishery and whilst participating in the Subarea 88.1 fishery in their written reports. However, the line sink rate data from both the pre-fishery testing and the in-fishery monitoring were not reported. The Working Group recommended that observer forms be modified to capture these data in future.

Determining Nautical Twilight in High Latitude Areas

7.98 Feedback was received from technical coordinators that observers had difficulty in determining nautical twilight in high latitude areas as current tables provided to observers stop at 75 degrees of latitude. The Working Group recommended that in future, tables covering the full extent of the Convention Area are provided to observers, preferably degree by degree rather than in 5 degree blocks.

Recording Seabird Interaction Data in Trawl Fisheries

7.99 The trawl forms currently used by observers do not capture seabird-interaction data in the same way as the longline forms. This lack of data makes the analysis of seabird–trawl interactions difficult (see paragraphs 8.19 and 8.20). The Working Group recommended that the observer trawl forms should be modified to capture the data needed for analysis of these interactions in a similar way to the current longline forms.

Use of Video Monitoring

7.100 WG-FSA-01/57 reported on recent developments in the use of video monitoring. The Working Group noted that the use of video monitoring systems is developing rapidly in fisheries for a variety of purposes. It was noted that such systems had the potential advantage of providing greater levels of coverage of fisheries for seabird interactions whilst allowing observers more time to work on other tasks.

7.101 Current video monitoring systems, so long as the camera is correctly positioned, should adequately record all incidents of seabird capture on demersal longline vessels. However, such systems leave at least four unresolved issues: data storage (tape or digital) on long trips, viewing of tapes to check for incidental captures, identification of the seabird species captured, and collection of specimens.

7.102 Rapid advances in digital video and data warehousing should resolve the data storage issue in the near future. Onshore viewing of tapes is possible, but likely expensive and time consuming. This needs further investigation, including assessment of costs. It is hoped that video recognition software may resolve this issue within the next few years (WG-FSA-01/57). Future advances in video recognition software may also allow rapid identification to the level of genus; however, species identification will likely require collection of actual specimens for quite some time. By collecting the required specimens, either observers or fishers could resolve this issue.

7.103 In summary, current systems do not yet appear able entirely to replace observer coverage with respect to assessing the incidental mortality of seabirds. However the Working Group noted that systems are being developed that may allow video monitoring systems to be used to assess the incidental mortality of seabirds in the near future and urged Members to report on such developments and any trials undertaken.

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

Unregulated Seabird By-catch

7.104 As no information is available on seabird by-catch rates from the unregulated fishery, estimates have been made using both the average catch rate for all cruises from the appropriate period of the regulated fishery 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 set at night, to use streamer lines or to use any other mitigation measure. Therefore catch rates, on average, are likely to be considerably higher than in the regulated fishery. For Subarea 48.3, the worst-case catch rate was nearly four times the average value and applies only to a single cruise in the regulated fishery. Using this catch rate to estimate the seabird catch rate of the whole unregulated fishery may produce a considerable overestimate.

7.105 In view of the fact that:

(i) seabird by-catch rates in the regulated fishery have been reduced substantially since 1997, due to much better compliance with CCAMLR conservation measures, including those relating to closed seasons; and

(ii) it is unreasonable to assume that the unregulated fishery made comparable improvements to the timing and practice of its operations;

the Working Group decided that it should continue to use the seabird by-catch rates from 1997, as was done in this assessment for the last three years. The assessment this year, therefore, followed the identical procedure to that used last year (SC-CAMLR-XIX, Annex 5, paragraphs 7.66 to 7.68).

Unregulated Effort

7.106 To estimate the number of hooks deployed by the unregulated fishery, it is assumed that the fish catch rate in the regulated and unregulated fisheries is the same. Estimates of fish catch rate from the regulated fishery and estimated total catch from the unregulated fishery can then be used to obtain an estimate for the total number of hooks using the following formula:

$$\text{Effort}(U) = \text{Catch}(U)/\text{CPUE}(R),$$

where U = unregulated and R = regulated.

Catch rates for Divisions 58.4.4 and 58.5.2 were assumed to be identical to those for Division 58.5.1.

7.107 The fishing year was divided into two seasons, a summer season (S: September to April) and a winter season (W: May to August), corresponding to periods with substantially different bird by-catch rates. There is no empirical basis on which to split the unregulated catch into summer and winter components. Three alternative splits (80:20, 70:30 and 60:40) were used.

7.108 The seabird by-catch rates used were:

Subarea 48.3 –
summer: mean 2.608 birds/thousand hooks; maximum 9.31 birds/thousand hooks;
winter: mean 0.07 birds/thousand hooks; maximum 0.51 birds/thousand hooks.

Subareas 58.6, 58.7, Divisions 58.5.1 and 58.5.2 –
summer: mean 1.049 birds/thousand hooks; maximum 1.88 birds/thousand hooks;
winter: mean 0.017 birds/thousand hooks; maximum 0.07 birds/thousand hooks.

Division 58.4.4 –
summer: mean 0.629 birds/thousand hooks; maximum 1.128 birds/thousand hooks;
winter: mean 0.010 birds/thousand hooks; maximum 0.042 birds/thousand hooks.

Results

7.109 The results of these estimations, based on estimates of IUU catches in Tables 3 to 11, are shown in Tables 60 and 61.

7.110 For Subarea 48.3, depending on the proportionate split of catches into summer and winter, estimates of the seabird by-catch in the unregulated fishery range from a lower level (based on the mean by-catch rate of regulated vessels) of 1 600–2 100 birds in summer (and 10–30 in winter) to a potentially higher level (based on the maximum by-catch rate of regulated vessels) of 5 600–7 400 birds in summer (and 100–200 in winter).

7.111 For Subareas 58.6 and 58.7 combined, depending on the proportionate split of catches into summer and winter, estimates of the seabird by-catch in the unregulated fishery range from a lower level (based on the mean by-catch rate of regulated vessels) of 11 900–15 800 birds in summer (and 70–130 in winter) to a potentially higher level (based on the maximum by-catch rate of regulated vessels) of 21 200–28 300 birds in summer (and 260–530 in winter).

7.112 For Divisions 58.5.1 and 58.5.2, depending on the proportionate split of catches into summer and winter, estimates of the seabird by-catch in the unregulated fishery range from a lower level (based on the mean by-catch rate of regulated vessels) of 13 200–17 600 birds in summer (and 70–150 in winter) to a potentially higher level (based on the maximum by-catch rate of regulated vessels) of 23 700–31 500 birds in summer (and 300–590 in winter).

7.113 For Division 58.4.4, depending on the proportionate split of catches into summer and winter, estimates of the seabird by-catch in the unregulated fishery range from a lower level (based on the mean by-catch rate of regulated vessels) of 9 200–12 300 birds in summer (and 50–100 in winter) to a potentially higher level (based on the maximum by-catch rate of regulated vessels) of 16 500–22 100 birds in summer (and 210–410 in winter).

7.114 The overall estimated totals for the whole Convention Area (Tables 60 and 61) indicate a potential seabird by-catch in the unregulated fishery of 36 000–69 000 (lower level) to 48 000–90 000 birds (higher level) in 2000/2001.

7.115 This compares with totals of 17 000–27 000 (lower level) to 66 000–107 000 (higher level) in 1996/97; 43 000–54 000 (lower level) to 76 000–101 000 (higher level) in 1997/98; 21 000–29 000 (lower level) to 44 000–59 000 birds (higher level) in 1998/99; and 33 000–63 000 (lower level) to 43 000–83 000 birds (higher level) in 1999/2000. Attempts to draw inferences regarding changes in by-catch levels in the IUU fishery should be viewed with caution, given the uncertainties and assumptions involved in these calculations.

7.116 Note that the overall total figures for 1999/2000 have been adjusted to take into account revised figures for estimated unregulated *Dissostichus* spp. catch in Subarea 48.3 (396 tonnes in place of 350 tonnes) and revised figures for the regulated catch rates of *Dissostichus* spp. in Subarea 48.3 (0.31 in place of 0.32), Subarea 58.6 (0.09 in place of 0.081), Subarea 58.7 (0.10 in place of 0.13) and Divisions 58.4.4, 58.5.1 and 58.5.2 (0.24 in place of 0.063, 0.236 and 0.236 respectively).

7.117 The composition of the estimated potential seabird by-catch based on data since 1997 is set out in Table 62. This indicates a potential by-catch in 2000/01 of 10 000–19 000 albatrosses, 1 700–3 000 giant petrels and 26 000–49 000 white-chinned petrels in the unregulated fishery in the Convention Area.

7.118 As in the last four years, it was emphasised that the values in Tables 60 to 62 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.

7.119 Nevertheless, even taking this into account, the Working Group endorsed its conclusions of recent years that such levels of mortality remain entirely unsustainable for the populations of albatrosses and giant and white-chinned petrels breeding in the Convention Area. Recent decreases in populations of these species in Subareas 58.6 and 58.7 (paragraphs 7.15 and 7.16), a region particularly affected by IUU fishing, are potential evidence of this.

7.120 The Working Group noted that substantial IUU catches of toothfish had been reported from Area 51 (adjacent to CCAMLR Subareas 58.6 and 58.7). If these catches represented mis-reporting of catches actually taken within the Convention Area, then the estimated by-catch of seabirds would be commensurately higher than estimated. On the other hand, if the provenance of the toothfish catches was accurately reported, then the associated seabird by-catch is likely to include substantial numbers of birds breeding in the Convention Area.

Summary Conclusion

7.121 Ad hoc WG-IMALF once again urgently drew the attention of WG-FSA, the Scientific Committee and the Commission to the numbers of albatrosses and petrels being killed by unregulated vessels fishing in the Convention Area. In the last five years an estimated total of 276 000 to 438 000 seabirds have been killed by these vessels. Of these:

(i) 40 500 to 89 500 were albatrosses, including individuals of four species listed as globally threatened (Vulnerable) using the IUCN threat classification criteria (BirdLife International, 2000);

(ii) 7 000–14 600 were giant petrels, including one globally threatened (Vulnerable) species; and

(iii) 109 000–235 000 were white-chinned petrels, a globally threatened (Vulnerable) species.

7.122 These levels of loss of birds from the populations of these species and species-groups are broadly consistent with such data as exist on the population trends of these taxa (paragraphs 7.15 and 7.16), including deterioration in conservation status as measured through the IUCN criteria.

7.123 These and several other albatross and petrel species are facing potential extinction (e.g. as measured by the IUCN criteria) as a result of longline fishing. The Working Group again urgently requested the Commission to take all action possible to prevent further seabird mortality by unregulated vessels in the forthcoming fishing season.

Incidental Mortality of Seabirds in relation to New and Exploratory Fisheries

Assessment of Risk in CCAMLR Subareas and Divisions

7.124 As in previous years, concerns were raised relating to the numerous proposals for new fisheries and the potential for these new and exploratory fisheries to lead to substantial increases in seabird incidental mortality.

7.125 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; and
(iii) magnitude of general potential risk of by-catch of albatrosses and petrels.

7.126 The Working Group again noted that the need for such assessments would be largely unnecessary if all vessels were to adhere to all elements of Conservation Measure 29/XIX. It is considered that these measures, if fully employed, and if appropriate line weighting regimes could be devised for autoliners, should permit longline fishing activities to be carried out in any season and area with negligible seabird by-catch.

7.127 In 1999 the Working Group carried out comprehensive assessments on the potential risk of interaction between seabirds, especially albatrosses, and longline fisheries for all statistical areas in the Convention Area. These assessments were combined into a background document for use by the Scientific Committee and Commission (SC-CAMLR-XVIII/BG/29) and it was agreed that a similar document should be tabled annually for the Scientific Committee.

7.128 This year new data on at-sea distribution of albatrosses and petrels from satellite-tracking and other studies was provided in WG-FSA-01/10, 01/11, 01/12, 01/25, 01/26 and 01/67. This information was used to update the assessment of potential risk of interaction between seabirds and longline fisheries for Statistical Areas 48.6, 58.4.4, 58.5.1, 58.5.2, 58.6 and 58.7. The revised assessments are incorporated in full into SC-CAMLR-XX/BG/11; changes are noted below:

(i) Subarea 48.6:

Breeding species known to visit this area: wandering albatross and grey-headed albatross from Marion Island.

Breeding species inferred to visit this area: wandering albatross, grey-headed albatross and light-mantled albatross from Prince Edward Island; light-mantled albatross from Marion Island; black-browed albatross, grey-headed albatross, sooty albatross, white-chinned petrel from elsewhere within the Convention Area.

(ii) Division 58.4.4:

Breeding species known to visit this area: wandering albatross, light-mantled albatross from the Crozet Islands, wandering albatross and grey-headed albatross from Marion Island.

(iii) Division 58.5.1:

Breeding species known to visit this area: wandering albatross from the Crozet Islands, wandering albatross from Marion Island, black-browed albatross from the Kerguelen Islands, Amsterdam albatross from Amsterdam Island.

Breeding species inferred to visit this area: all the remaining species breeding at the Kerguelen Islands; most, if not all, species breeding at Heard/McDonald Islands; many species breeding at the Crozet Islands, wandering albatross from Prince Edward Island.

(iv) Division 58.5.2:

Breeding species known to visit this area: wandering albatrosses from the Crozet Islands; wandering albatross from Marion Island; black-browed albatrosses from the Kerguelen Islands; Amsterdam albatross from Amsterdam Island.

Breeding species inferred to visit this area: all species breeding at Heard/McDonald Islands; wandering albatross, grey-headed albatross, yellow-nosed albatross, sooty albatross, light-mantled albatross, northern giant petrel, white-chinned petrel from the Kerguelen Islands; yellow-nosed albatross from Amsterdam Island; wandering albatross from Prince Edward Island.

(v) Subarea 58.6:

Breeding species known to visit this area: wandering albatross, sooty albatross, light-mantled albatross from the Crozet Islands; wandering albatross from Marion Island.

Breeding species inferred to visit this area: in addition to all the Crozet Islands breeding species, wandering albatross from Prince Edward Island and the Kerguelen Islands; black-browed, yellow-nosed, sooty, light-mantled albatrosses, northern giant petrel, southern giant petrel, white-chinned petrel, grey petrel from the Prince Edward Islands; grey-headed albatross, white-chinned petrel, grey petrel from the Kerguelen Islands.

(vi) Subarea 58.7:

Breeding species known to visit this area: wandering albatross from the Crozet Islands; wandering albatross from Marion Island.

The Working Group noted that there had been no changes to the advice to the Scientific Committee on the levels of risk of seabird by-catch for any part of the Convention Area.

New and Exploratory Longline Fisheries Operational in 2000/01

7.129 Of the 36 proposals last year for new and exploratory longline fisheries, only three were actually undertaken: by New Zealand, South Africa and Uruguay, all in Subarea 88.1.

7.130 No seabird by-catch was reported to have been observed in any of these fisheries. Clearly the strict adherence in Subarea 88.1 to Conservation Measure 29/XIX and to the specific requirements set out in Conservation Measure 210/XIX with respect to line weighting regimes, combined with fishing in an area of average-to-low, and average risk, proved successful in eliminating the incidental by-catch of seabirds in Subarea 88.1 to date.

New and Exploratory Fisheries Proposed for 2001/02

7.131 The areas for which proposals for new and exploratory longline fisheries were received by CCAMLR in 2001 were:

Subarea 48.6	(Japan, New Zealand, South Africa, Uruguay)
Division 58.4.1	(Japan)
Division 58.4.3	(France, Japan)
Division 58.4.4	(France, Japan, New Zealand, South Africa, Uruguay)
Subarea 58.6	(Chile, France, Japan, South Africa)
Subarea 88.1	(Japan, New Zealand, Russia, South Africa)
Subarea 88.2	(Japan, New Zealand, Russia, South Africa)

7.132 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 paragraph 7.125, SC-CAMLR-XX/BG/11 and paragraph 7.128. A summary of risk level, risk assessment, IMALF recommendations relating to fishing season and any inconsistencies between these and the proposals for new and exploratory longline fisheries in 2001/02, is set out in Table 63.

7.133 In summary, the main issues to be resolved in relation to seabird incidental mortality are:

(i) to check that France intends to comply with Conservation Measure 29/XIX, rather than Conservation Measure 29/XVI as indicated, for Subarea 58.6 and Divisions 58.4.3 and 58.4.4;

(ii) whether or not Japan intends to comply with Conservation Measure 29/XIX and to use an international scientific observer in Subareas 48.6, 58.6, 88.1 and 88.2, and Divisions 58.4.1, 58.4.3 and 58.4.4;

(iii) clarification of fishing season in respect of South Africa's applications for Subarea 58.6 and Division 58.4.4; and

(iv) applications for variations from Conservation Measure 29/XIX (e.g. similar to Conservation Measure 210/XIX) for Subareas 48.6, 88.1, 88.2 and Division 58.4.4.

7.134 Mr T. Inoue (Japan) stated that Japan would be tabling an addendum to its notification (CCAMLR-XX/10) for new and exploratory fisheries in 2001/02, indicating its intention to use international scientific observers and to comply with Conservation Measure 29/XIX.

7.135 In previous years vessels fishing in exploratory fisheries in Subarea 88.1 have received a variation from the requirement of Conservation Measure 29/XIX to set longlines at night. This variation was given providing that vessels complied fully with measures specified in Conservation Measure 210/XIX, designed to ensure that a line sink rate of at least 0.3 m/s was achieved during daytime fishing operations.

7.136 All vessels participating in the exploratory fisheries in Subarea 88.1 reported no seabird mortalities. The Working Group attributed this result largely to strict adherence to Conservation Measure 210/XIX, although low levels of seabird abundance and associated risk of incidental mortality are likely to have contributed, especially at higher latitudes. The Working Group recommended that Conservation Measure 210/XIX should be continued in 2001/02.

7.137 The Working Group believed that the provisions of Conservation Measure 210/XIX could be extended to other vessels undertaking new or exploratory fishing in areas of similar classification of risk of seabird mortality (risk levels 1, 2 or 3). The Working Group recommended that conservation measures analogous to Conservation Measure 210/XIX (including Annex A) should be applied to exploratory fisheries proposed for Subareas 48.6 (risk level 2), 88.2 (risk level 1), and Division 58.4.4 (risk level 3) in 2001/02. It was noted that South Africa had indicated, in their proposals for exploratory fishing in each of these subareas and divisions in 2001/02, their preparedness to conduct line weighting experiments as approved by the Scientific Committee.

7.138 The Working Group emphasised, however, that it would be premature to extend similar provisions to exploratory fisheries in areas of higher risk of seabird by-catch.

7.139 The Working Group recommended that in any conservation measures, analogous to Conservation Measure 210/XIX, developed for new and exploratory fisheries, a strict precautionary limit on seabird by-catch should be set, which, if attained would result in the vessel reverting to night setting. It felt that a limit of three birds per vessel would still be appropriate.

7.140 The Working Group noted that WG-FSA-01/46 provided details of an alternative, simpler method to the use of TDRs for testing line sink rates. The working group recommended that Annex A of Conservation Measure 210/XIX be revised to incorporate use of this method. Draft text of an appropriate revision of Annex A of Conservation Measure 210/XIX is provided in Appendix G.

7.141 The Working Group noted that the revised paragraphs 2 to 4 and 5 to 10 of Appendix G could apply equally to the use of TDRs. A summary of the TDR information required for equivalent paragraphs 6 to 8 is contained in WG-FSA-01/44.

Incidental Mortality of Seabirds during Longline
Fishing outside the Convention Area

7.142 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.

7.143 WG-FSA-01/28 reported on seabird by-catch by tuna longline fisheries within the EEZ of South Africa from 1998 to 2000. Information was collected by observers on domestic and foreign-licensed vessels from Japan and Taiwan. A total of 11.85 million hooks was set, of which South African vessels set only 0.46 million.

7.144 The number of observed hooks was 143 000 (1.2% of the total). By-catch was high at 0.77 birds/thousand hooks in the domestic fishery and very high at 2.64 birds/thousand hooks by Japanese vessels. No information was available for Taiwanese vessels.

7.145 Most of the 229 birds recorded by observers as killed were albatrosses and white-chinned petrels, including a number of species that breed within the CCAMLR Convention Area, notably black-browed albatrosses and white-chinned petrels. Based on the 1998/99 fishing effort, it was estimated that 19 000–30 000 seabirds, of which 70% are albatrosses, are killed annually in South Africa's EEZ.

7.146 The Working Group noted that compliance with required mitigation measures was reported as being incomplete, including the failure to use streamer lines.

7.147 The continued collection of data by observers in the South African fishery was encouraged. Further information from foreign-licensed vessels, including those of Taiwan, would be most valuable in assessing the mortality in South African waters of seabirds originating from the CCAMLR Convention Area.

7.148 Pelagic and demersal longline fisheries, chiefly targeting tuna and ling in New Zealand waters during 1999/2000, continued to cause mortality of seabirds, including some breeding within the CCAMLR Convention Area (WG-FSA-01/59).

7.149 A description of plans to quantify and mitigate seabird by-catch around the Falkland/Malvinas Islands was presented in WG-FSA-01/79. Initial observations reported a low by-catch of three black-browed albatrosses in five months of fishing during winter by two vessels. Seabirds from the Convention Area, including wandering albatrosses and white-chinned petrels, are known to visit this area (WG-FSA-01/25).

7.150 During 1999 all pelagic longline fishing in the Australian Fishing Zone (AFZ) was performed by domestic vessels (WG-FSA-01/82). The effort by these vessels continues to increase, with almost 14 million hooks set in 1999, an increase of 48% compared with the 1998 effort. This fishery is carried out in the absence of an observer scheme, and levels of by-catch are unknown. Seabirds from the Convention Area are known to have been killed in the AFZ in the past.

7.151 During 1999 most observations in the AFZ were focused on investigations of efficacy of mitigation measures (WG-FSA-01/80 and 01/81). Therefore by-catch rates were not sampled randomly, nor extrapolated across fishing zones.

7.152 Spatio–temporal trends in longline fisheries in the Southern Ocean adjacent to the CCAMLR Convention Area since the late 1960s show a marked increase in effort, especially by Taiwanese pelagic vessels, although Japanese effort decreased in the 1990s (WG-FSA-01/49). The data presented in this review paper are potentially highly relevant for analyses of by-catch of seabirds breeding within the CCAMLR Convention Area in relation to their foraging ranges and to fishing effort.

7.153 Dr E. Fanta (Brazil) reported that Brazilian scientists were investigating seabird by-catch which included birds from within the CCAMLR Convention Area, from longline fisheries within its waters. It was understood that information on by-catch was also being collated for Argentinean waters. These and other CCAMLR Members were encouraged to report the results of such initiatives to future meetings of the Working Group.

7.154 The Working Group recollected the inquiry initiated last year into by-catch mitigation measures on Japanese vessels in respect of by-catch of Convention Area birds in Tristan da Cunha waters (SC-CAMLR-XIX, Annex 5, paragraphs 7.104 to 7.106; SC-CAMLR-XIX, paragraph 4.35).

7.155 The Secretariat had, as requested, contacted Japan to seek to clarify the current obligations of Japanese longline fishing vessels relating to the use of mitigating measures in respect of seabird by-catch.

7.156 The response to the Secretariat to date was that Japan did not regard this as a CCAMLR matter; however, it would respond to the Scientific Committee and may indicate that it follows measures under ICCAT and CCSBT.

7.157 The Working Group noted that the mortality of birds from the Convention Area in fisheries outside the area was highly relevant to CCAMLR. It was disappointed not to have appropriate information from Japan, particularly as this was also relevant to the seabird mortality in South African waters reported in WG-FSA-01/28. It hoped that the Japanese report to the Scientific Committee would indicate the precise nature of the mitigation measures in use in each of the relevant longline fisheries and the extent to which the use of these measures is voluntary or mandatory.

7.158 The Working Group recollected its comments last year (SC-CAMLR-XIX, Annex 5, paragraph 7.11) and noted increasing evidence this year of the importance of seabird by-catch in areas adjacent to the Convention Area. It considered that it was now very timely to request all Members and other countries conducting or permitting longline fishing in areas outside the CCAMLR Convention Area where seabirds from the Convention Area are killed, to provide summary data on:

(i) longline fishing effort (at least at the scale of FAO area) in each type of longline fishery;

(ii) rates of incidental mortality of seabirds associated with each longline fishery and details of the species involved;

(iii) mitigating measures in use in each fishery and the extent to which any of these are voluntary or mandatory; and

(iv) nature of observer programs, including observer coverage, associated with each fishery.

7.159 The Working Group agreed also to summarise data on the above topics which had previously been submitted to CCAMLR and to review this at its next meeting.

Research into and Experiences with Mitigation Measures

Night Setting

7.160 WG-FSA-01/08 reported that around the Prince Edward Islands (Subarea 58.7) seabird mortality rates were significantly higher for lines set during the day (0.106 birds/thousand hooks) than those set at night (0.073 birds/thousand hooks). This was due to the large difference in mortality rates of albatrosses and giant petrels during the day (0.031 birds/thousand hooks) compared to the night (0.004 birds/thousand hooks). There was no significant difference in the mortality rates of white-chinned petrels during the night and day. This demonstrates that night setting continues to be one of the most effective and simple methods of reducing albatross mortalities. Although night setting is one of the most efficient means to reduce incidental seabird mortalities, it is insufficient in isolation to reduce white-chinned petrel mortalities.

Offal

7.161 WG-FSA-01/60 reported on the use of scupper screens to prevent discharge of offal and bait from a vessel while processing catch. This measure acts to reduce the attractiveness of vessels to seabirds. The Working Group recommended that vessels ensure scupper screens are clean and functional, made of a material suitable for the saltwater environment, and kept clear to avoid vessel stability hazards. Dual scupper screens on board are recommended to allow scuppers to remain covered whilst dirty screens are cleaned. Spare covers should be on board in the event that one is lost. The Working Group also recommended that vessels install a tray below the baiting head to collect unused baits and install screens over scuppers to collect baits that are on the floor.

7.162 SC-CAMLR-XX/BG/7 reported the incidence of hooks and associated lines found in regurgitates, diet samples and around nests of several albatross and other species at Bird Island, South Georgia, and that the numbers of hooks found had steadily increased over several years to an all-time high in 2000/01. Hooks were chiefly those used in the toothfish fishery. Mr Cooper indicated that hooks are increasingly common in similar situations at the Prince Edward Islands (WG-FSA-01/10 and paragraph 7.22). It was likely that the main source of hooks was from heads discarded by longliners, including vessels operating in the regulated fisheries in Subareas 48.3 and 58.6/58.7 (WG-FSA-01/22, Table 2). Such potential hazards to albatrosses could be easily avoided by the removal of hooks from the fish heads prior to their discard. The Working Group proposed that such a recommendation be added to existing conservation measures.

Streamer Lines

7.163 WG-FSA-01/44 and 01/60 both provided detailed diagrams of the boom and bridle system used by the New Zealand vessel *San Aotea II*. This system allows the skipper and crew to move the position of the streamer line either to the starboard or port so that it is always directly over the longline, irrespective of the wind direction. A short video demonstrating the system had been prepared by the skipper of the vessel. The Working Group recommended that a final edited version of the video be made available to the

Secretariat for distribution to technical coordinators to provide to longline fishers in the Convention Area. WG-FSA-01/60 reported that two new innovations are being investigated: a line shaker (termed a 'gigolo') and two long poles with streamers that extend directly aft from both stern quarters. The Working Group requested reports on the new innovations prior to its next meeting.

7.164 Last year the Working Group noted (SC-CAMLR-XIX, paragraphs 7.123 and 7.139) that the use of paired streamer lines should provide additional longline protection when setting gear in crosswinds and urged Members to investigate this, particularly for vessels which fish in summer in Subareas 58.6 and 58.7. WG-FSA-01/35 reported on a study in the Alaskan demersal longline fishery to evaluate the effectiveness of various deterrent devices tested, including paired streamer lines. Experiments conducted over two years in the Pacific cod autoliner fleet (over 6 million hooks, almost 500 sets) indicated that paired streamer lines reduced seabird by-catch rates by 88% to 100% relative to controls with no deterrents. Single streamer lines were slightly less effective at reducing seabird by-catch (71%). Seabird abundance and attack rates during single streamer sets were not significantly different from controls of no deterrent. This research suggests that paired streamer lines may be more effective than single streamer lines at reducing seabird mortalities in the Convention Area. WG-FSA-01/29 suggested the testing of paired streamer lines in Spanish longline systems used in the Convention Area. The Working Group encouraged this and recommended that Members support testing of paired streamer lines in the Convention Area.

Bait

7.165 The use of artificial bait in longline fisheries may help reduce the incidental mortality of seabirds. From a mitigation perspective at least two potential advantages exist with artificial bait: the colour of the bait can be altered to make it less attractive or visible to seabirds, and the bait could be manufactured so that it is negatively buoyant.

7.166 Mr Smith reported that some trials with artificial bait had been undertaken in New Zealand domestic autoline fisheries. Initial results indicated lower fish catch rates when using artificial bait. Colouring artificial bait blue was also attempted by using a dye post-thawing. Unfortunately, the artificial bait was not robust enough to survive the soak in the dye solution required to colour the bait blue. New Zealand fishers are in contact with the manufacturers of the bait and are attempting to resolve fish catch rate issues initially, prior to progressing alterations to bait colour and buoyancy.

7.167 The Working Group noted the trials conducted to date in New Zealand and encouraged any further research be reported to it next year.

7.168 Dr Fanta reported to the Working Group that tests are currently being conducted on dyed bait (see paragraph 7.185) to determine if the colour reduces the visibility of the bait to birds during pelagic longline fishing, thereby reducing the likelihood of birds becoming hooked. The Working Group requested that Brazil report the results of this study to it next year.

7.169 WG-FSA-01/08 reported that a high proportion (76%) of white-chinned petrels caught on vessels fishing around the Prince Edward Islands were foul hooked in their wings and

bodies. WG-FSA-01/44 reported similar observations with grey petrels and suggested that intense feeding activity on loose baits made these birds vulnerable to getting caught on nearby hooks. This behaviour is characterised by feeding on a trail of unused loose baits that forms behind the vessel during setting. On occasion this trail may drift over the setting longline. The trail is formed from baits flicked off hooks after passing through the autobaiter. This represents an additional means by which birds are attracted to the vessel and hooked. The Working Group recommended that, in circumstances where a dedicated seabird observer is present, appropriate data are collected on the baits that are flicked off to understand better the nature of the problem and to help devise potential solutions.

Underwater Setting

7.170 Further information on the effectiveness of the Mustad underwater setting funnel (lining tube) is contained in WG-FSA-01/35. This study, which was undertaken on autoline vessels in Alaskan waters, found that the funnel reduced seabird captures by 69% compared to the control of no mitigation measures. The authors report that results of a similar study in the Norwegian demersal longline fishery were highly variable and that this may have been due to the funnel delivering the line at shallow depths when the vessel hull lifted out of the water in rough conditions. The dominant seabird species caught in both of these studies is the northern fulmar, which is primarily a surface feeder. Because many of the seabird species vulnerable to incidental capture in the CCAMLR Convention Area are proficient divers, the results of these studies may not apply. However, it appears that the *Eldfisk* has continued to use the Mustad funnel with success in Subareas 58.6 and 58.7 in 2000/01 during day sets. When the funnel was used in conjunction with a streamer line during day sets, the seabird catch rate was 0.008 birds/thousand hooks. This compared to 0.005 birds/thousand hooks for night sets with streamer lines.

7.171 Results of preliminary trials of an underwater setting device in the Australian domestic pelagic tuna fishery were reported last year in WG-FSA-00/64. WG-FSA-01/80 reported on final results for the testing at sea of two underwater setting devices – a chute and a capsule. Both devices adequately demonstrated their capacity to minimise seabird interactions during line setting in pelagic longline fishing. Both showed dramatically lower rates of baits taken (0.3 baits/thousand hooks for the chute, 1.5 baits/thousand hooks for the capsule) in comparison to baited hooks set in the standard manual way (8.0 baits/thousand hooks). Most or all baits that were taken were the direct result of tangles on board the vessel. Once operational problems encountered during the first cruise were corrected, no birds were taken in the second cruise. The chute is currently being trialled at sea on 10 vessels. The Working Group requested that results of these sea trials be reported to it next year and encouraged the further development of the underwater setting capsule.

Line Shooter

7.172 Norwegian trials (WG-FSA-01/78) examined the effect of a line shooter on line sink rate. The line shooter is a pair of hydraulically operated wheels that pull the line through the auto-baiter and deliver the line into the water in a slack state rather than under tension. This means the line enters the water directly behind the vessel and begins sinking immediately,

thus reducing the time during which the hooks are available to seabirds. This study found that the time for the line to reach 3 m was 4 seconds (15%) faster with the shooter than without. In Alaskan trials (WG-FSA-01/35), the line shooter significantly increased the rate of seabird by-catch (54%, fulmars and shearwaters) compared to a control of no deterrent. The authors cited a Norwegian study whereby seabird by-catch rates were reduced with the line shooter (59%), but not as much when compared to streamer lines (98–100%) or an underwater setting funnel (72–92%). Birds were able to take baits when the line shooter was in use. The Working Group noted that the line shooter's ability to set slack line is impeded when the hull of the vessel lifts on a wave, and that this could be overcome if the shooter speed was controlled by a governor. The Working Group encouraged the manufacturer to address this problem, after which further testing of the line shooter was recommended.

Line Weighting

7.173 Significant progress had been made during 2000/01 in the implementation of a practical line weighting regime for vessels using the Spanish longline system. The new line weighting regime prescribed in Conservation Measure 29/XIX (8.5 kg weights spaced at no more than 40 m) was used during five cruises. On eight other cruises, the weighting regimes were close to that prescribed but not fully in compliance. One vessel using the Spanish longline system complied with the requirement to attain a sink rate of 0.3 m/s while daylight setting in Subarea 88.1, using weights equivalent to about 12 kg every 40 m.

7.174 Of vessels which complied with the line weighting provisions of Conservation Measure 29/XIX, on only one cruise (by the *Koryo Maru 11* in summer around the Prince Edward Islands) of seven was any seabird mortality reported (8 birds at 0.014 birds/thousand hooks), compared with on six of 15 cruises of vessels not complying with the measure (involving 37 birds at rates of 0.003 to 0.212 birds/thousand hooks).

7.175 A new simple means of measuring line sink rate has been devised (WG-FSA-01/46). The Working Group recommended that measurements of line sink rate be made by observers using this simple technique ('bottle test' described in WG-FSA-01/46; see Appendix G). This will provide data that can be used to develop a predictive sink rate model for the Spanish longline system similar to that developed for autoline fishing gear (WG-FSA-01/56).

7.176 WG-FSA-01/44 reported on an experiment undertaken in New Zealand waters on autoline vessels to determine the sink rate of unweighted lines, and of lines with 5 kg weights spaced 400 m apart. The results show that the sink rate of the line is not significantly increased with this weighting regime, and for both treatments, the line is only between 2 and 5 m deep at the end of aerial section of the streamer line. This means that baited hooks are still available to a number of albatross and petrel species despite the use of a streamer line. Line weighting experiments in Subarea 88.1 have subsequently found that weights of around 5 kg need to be 30 to 40 m apart to achieve the sink rate requirement of 0.3 m/s (WG-FSA-01/56).

7.177 WG-FSA-01/35 reported on experiments to assess the effectiveness of a number of mitigation measures in the Alaskan demersal longline fisheries, including line weighting on autoline vessels. Line sink rates were measured with unweighted lines, and compared with lines with 4.5 kg weights spaced 90 m apart. This weighting regime did not significantly increase line sink rate and vessel speed had a much greater influence on the distance at which longlines were vulnerable to bird attacks. This result is in accord with all line sink rate research reported to CCAMLR to date (Robertson, 2000, Figure 3). The authors concluded that for weighting to be practical and effective at reducing seabird by-catch, the weight must be integrated into the line.

7.178 Integrated line weighting should allow target sink rates to be achieved for autoline vessels without the manual addition of weights. Integrated line weighting would therefore alleviate the labour and safety issues raised by fishers with respect to manual line weighting (WG-FSA-01/60).

7.179 One of the autoline equipment manufacturers, Fiskevegn (Norway), has agreed to make samples of longline with the weight integrated into the backbone. Five different weights of longline will be manufactured for testing in New Zealand domestic fisheries. The first aim of this project is to test the prototype line for operational effectiveness and fishing efficiency.

7.180 If the operational effectiveness and fishing efficiency of heavy longline are proven, seabird specialists will then be used to design and conduct an experiment to determine the effectiveness of this gear in the reduction of incidental seabird mortality. The Working Group supported this initiative and requested to be kept informed of progress.

7.181 WG-FSA-01/81 reported on tests to investigate the effects of line weighting on sink rates of pelagic longline gear in the Australian tuna and billfish fisheries. The report concludes that the addition of an 80 g weight within 3 m of the hook, or 40 g at the hook, will achieve a sink rate of 0.26 to 0.30 m/s. Mr Baker indicated that at-sea trials will soon be commencing in the tuna fleet. The Working Group requested that the at-sea trial results be reported to it next year.

7.182 WG-FSA-01/56 reported on continued progress of analysis of longline sink rates of autoline vessels fishing in Subarea 88.1. This initiative was strongly supported by the Working Group (SC-CAMLR-XIX, paragraph 7.148) and preliminary results were reported in 1999/2000 (SC-CAMLR-XIX, paragraph 7.128). A model was developed which identified a range of values required to achieve the minimum required sink rate with 90–95% confidence; use of this model at sea may eliminate the need for routine deployment of TDRs in this or other fisheries. The 2001 preliminary predictive model comprised two variables that explained 60% of the overall variability in sink rate to 15 m, due to added weight (45%) and setting speed (15%). This is less than the variability accounted for by these two variables and swell height in last year's model run (72%). The change is probably attributable to recent changes in fishing gear (increased diameter of backbone) and calm weather conditions during much of the 2000/01 season. This preliminary model will be investigated further intersessionally. WG-FSA-01/56, Figure 7, illustrates the added weights which should be used at various vessel setting speeds. Weights should be spaced approximately 30 to 40 m apart. To monitor the accuracy of this predictive model, bottle tests (see paragraph 7.183) should be conducted to provide real-time feedback on the actual line sink rate achieved.

7.183 WG-FSA-01/46 reported on the 'bottle test', a simple alternative method to measure line sink rate. TDRs have been used in Subarea 88.1 for three years to measure the line sink rate as required in Conservation Measure 210/XIX. Observers reported that calculating line sink rates with TDRs can be time consuming, technical problems are frequent, and the interpretation of results can be difficult. Additionally, fishers have raised concerns about the costs involved with the high loss rate of TDRs. In contrast to TDRs, the bottle test is inexpensive, simple to use, and provides real-time data.

7.184 The Working Group discussed the potential for seabird mortalities associated with an autoline gear malfunction commonly referred to as 'hookups'. Hookups occur when hooks on the autoline magazine racks get out of order and cause the autobaiting and hook deployment system to malfunction. When this occurs, the deploying line is lifted out of the water, greatly reducing its sink rate and increasing the exposure of baited hooks to seabirds. The Working Group encouraged gear manufacturers to address this gear malfunction and to develop an engineering solution.

7.185 Dr Fanta reported that a collaborative project in Brazil involving government and university scientists and fishers is under way to test multiple deterrent measures. Five measures have been suggested for testing: streamer lines, bait colour, underwater setting, artificial bait and night setting. Tests are currently being conducted on dyed bait (see paragraph 7.168) to determine if the colour reduces the visibility of the bait to the birds, thereby reducing the likelihood of a bird becoming hooked. The Working Group requested a report on this research, when available.

Research Needs relating to the Spanish Method of Longline Fishing

7.186 Although Conservation Measure 29/XIX details a number of measures required of vessels using the Spanish method, insufficient information exists on the effectiveness of these measures, singly or in combination. The Spanish system is the most common gear deployment system in the Convention Area as well as commonly used in adjacent non-Convention waters frequented by Southern Ocean albatrosses and petrels.

7.187 The Scientific Committee noted last year (SC-CAMLR-XIX, paragraph 4.41(iv)) that:

(i) its goal of fisheries management as it relates to seabird by-catch in the Convention Area will be to allow fishing at any time of day without seasonal closure of fishing grounds;

(ii) current indications are that allowing fishing in summer, at night, using streamer lines, proper offal discharge practices and c. 40 m between weights on longlines (existing practice for Spanish system vessels), will still result in unacceptably high mortality of seabirds; and

(iii) further experimentation into the effectiveness of line weighting concepts and underwater setting devices with the Spanish system is important.

The Working Group noted that such experimentation is also critical if the by-catch of foraging seabirds in adjacent non-Convention Areas is to be addressed effectively.

7.188 WG-FSA-01/29 proposed and outlined such experiments. It suggested that the effects of measures for reducing seabird mortalities, used singly or in combination, should be determined in a rigorous controlled experiment conducted on a chartered commercial vessel across a range of sea and wind conditions. Mitigation measures to be tested, each at multiple levels, include: time of day, streamer lines, line weights, and bait and snood colour. The Working Group strongly supported this experimentation and recommended that Members facilitate the planning and undertaking of this study.

Industry Involvement in Research Initiatives

7.189 The Working Group noted and commended several collaborative research efforts, particularly projects in Australia, Brazil, New Zealand and the USA, involving direct input and participation by fishers (paragraphs 7.163, 7.164, 7.166 and 7.171).

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

IV Marine Science Congress

7.190 The IV Marine Science Congress, held in Argentina in September 2000, included presentations on seabird and marine mammal by-catch in fisheries, and the use of the Patagonian Shelf by South Atlantic seabirds. Selected abstracts are included in WG-FSA-01/27.

International Fishers' Forum

7.191 The International Fishers' Forum on Solving the Incidental Capture of Seabirds in Longline Fisheries was held in Auckland, New Zealand, in November 2000. The report on the forum is available in English at www.fishersforum.org, and in Spanish from jmolloy@doc.govt.nz. The forum was attended by fishers, scientists, technologists and government representatives from 12 countries, including 10 CCAMLR Members (SC-CAMLR-XX/BG/19).

7.192 The forum discussed mitigation measures to reduce seabird by-catch, agreeing that the use of multiple measures was the most effective approach to adopt. The need for effective education campaigns and observer programs was also highlighted. Participants agreed to share the results of research programs. Members of WG-IMALF who attended the forum indicated that it had facilitated highly constructive dialogue with fishers and fishery managers, including representatives from countries which infrequently attend such meetings (e.g. China, Taiwan).

7.193 Specific commitments made by participants are listed in the forum's report. Participants agreed to undertake such activities over a two-year period and to communicate via a listserver and by reporting to a second forum, planned to be held in Hawaii, USA, in late 2002.

7.194 Members were encouraged to disseminate information on the forum by way of articles in fishery magazines and journals.

Agreement on the Conservation of Albatrosses and Petrels

7.195 The final negotiation meeting for the Agreement on the Conservation of Albatrosses and Petrels (ACAP) was held in Cape Town, South Africa, in January/February 2001 (SC-CAMLR-XX/BG/17 and BG/20). Twelve range states and five international organisations, including CCAMLR, attended the meeting that successfully adopted by consensus the text of an Agreement and associated action plan (see www.ea.gov.au/biodiversity/international/index.html and wcmc.org.uk/cms/nw012906.htm). The Agreement, originally intended to be restricted to the Southern Hemisphere, allows for the later expansion to include albatrosses and petrels of the Northern Hemisphere, although it is intended that the focus will remain in the Southern Hemisphere in the short- to medium-term. Currently, the Agreement covers all the Southern Hemisphere albatrosses and all members of the genera *Macronectes* (giant petrels) and *Procellaria*.

7.196 In its role as Interim Secretariat, Australia arranged for the Agreement to be open for signature at a ceremony in Canberra, Australia, on 19 June 2001. Seven countries then signed (Australia, Brazil, Chile, France, New Zealand, Peru and the UK). Australia became the first range state to ratify the Agreement on 27 September 2001. The Agreement will enter into force upon ratification by five countries.

7.197 The Agreement's Action Plan (ACAP) describes conservation measures to be implemented by the parties. These include research and monitoring, reduction of seabird by-catch by fisheries, eradication of non-native species at breeding sites (especially cats and rats), reduction of disturbance and habitat loss and reducing pollution.

7.198 The Working Group recognised that the development of the ACAP was a most significant step to the further protection of albatrosses and petrels breeding within the CCAMLR Convention Area. CCAMLR Members who are range states (including distant-water fishing nations that interact with Southern Hemisphere albatrosses and petrels on the high seas) were encouraged to sign and ratify the Agreement and adopt its action plan provisions as soon as is feasible.

BirdLife International Seabird Conservation Programme

7.199 The intention of BirdLife South Africa to submit a medium-sized grant proposal to the Global Environment Facility to conduct activities to reduce the levels of mortality due to longlining throughout the range of those species of globally threatened seabirds that occur in southern African waters was noted (WG-FSA-01/13). This initiative follows an international workshop held in Cape Town, South Africa, in April 2001. The workshop was attended by invitees from nine countries, all Members of CCAMLR.

7.200 A South American regional workshop held by BirdLife International in Montevideo, Uruguay, in September 2001 further developed the GEF proposal (WG-FSA-01/13). The Working Group asked that the Secretariat request a report of this meeting to consider at its 2002 meeting.

7.201 The Working Group noted that this proposal could lead to the adoption of measures that would improve the conservation status of seabirds that are affected by longlining and that breed within the CCAMLR Convention Area.

7.202 The Working Group requested information from BirdLife International on relevant activities of its seabird conservation program and its 'Save the Albatross Campaign' to consider at its next meeting.

FAO International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries

7.203 The Working Group recollected the Commission's request (CCAMLR-XVII, paragraph 6.27; CCAMLR-XVIII, paragraph 6.15) that Members implement by 2001 their NPOAs in support of the FAO IPOA–Seabirds. Last year the information available (SC-CAMLR-XIX, paragraphs 4.43 and 4.44) was that:

(i) New Zealand and the USA already had draft plans available for consultation and that Australia's Threat Abatement Plan contained the essence of its NPOA (which would be prepared in due course);

(ii) Brazil and Chile were commencing to prepare plans; and

(iii) Japan was working to finalise its NPOA through dialogue with fishers and industries and intended to submit it to the FAO COFI meeting in 2001.

The Working Group encouraged other Members, particularly the European Community, which it was understood had only just embarked on the assessment process, to develop and implement their plans as soon as possible.

7.204 Progress on developing National Plans of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (NPOA–Seabirds) was reported by Member States at the 24th Session of FAO COFI (WG-FSA-01/62).

7.205 At the COFI session, progress to produce NPOA–Seabirds was reported by several CCAMLR Members. These included Australia, Brazil, the European Community, Japan, New Zealand, Norway, South Africa, USA and Uruguay. Argentina stated that it did not consider it needed to produce a NPOA–Seabirds. Namibia stated that it would require funding to produce its NPOA–Seabirds. No report was given by Chile.

7.206 The Working Group considered it essential that Argentina and Chile develop NPOA–Seabirds, based on high levels of seabird incidental mortality known to occur in their waters. It requested CCAMLR Members to submit reports of their progress towards developing and implementing NPOA–Seabirds to the Working Group at its next meeting.

7.207 The final USA plan was adopted in February 2001 (www.fakr.noaa.gov/protectedresources/seabirds/npoa/npoa.pdf) and was provided to the Working Group by the Secretariat as a reference document. Although not intended to cover seabird by-catch in the Southern Hemisphere, the USA's NPOA–Seabirds can serve as a valuable source of information on mitigation measures, especially for reducing by-catch of albatrosses and petrels, for CCAMLR fishing Members.

7.208 Intersessionally, Working Group members had had the opportunity to consider the draft New Zealand NPOA–Seabirds, which is also intended to cover trawling operations. It was noted that the document was a thorough, appropriate and detailed one, and that it is now under revision. Members intending to produce their own NPOA–Seabirds were encouraged to consult the draft document.

7.209 The Working Group reviewed a document entitled 'Japan's National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries', supplied as a reference document by the Secretariat via its FAO Observer. This document had been made available to attendees at the 24th COFI Session, but its current status was uncertain.

7.210 The Working Group noted that the document did not refer specifically to fishing within the Convention Area, clearly a significant omission, considering Japan's activities within CCAMLR. However, it did address longlining for southern bluefin tuna within the Southern Hemisphere, a fishery known to kill many seabirds originating from the Convention Area. No information was given on longlining for other species of tuna in the Southern Hemisphere fisheries, several of which also kill seabirds from the Convention Area (see WG-FSA-01/28).

7.211 The Japanese NPOA–Seabirds contained no assessment of the scale of the past and current by-catch by Japanese longliners. It also contained some errors of fact, for example on sizes of albatross populations.

7.212 It was unclear whether the application of any of the mitigation measures described was other than purely voluntary. Further, the Working Group considered that the mitigation measures described were generally inadequate to reduce seabird by-catch to acceptably low levels, especially in areas frequented by seabirds from the Convention Area.

7.213 The Working Group noted that several research activities relevant to mitigation of seabird by-catch, especially underwater setting, were mentioned in the Japanese NPOA–Seabirds; it requested that Japan supply the Working Group with details for its next meeting. It also requested further information on the status of mitigation measures in all Japanese fisheries relevant to Convention Area seabirds, together with clarification as to whether these measures were mandatory or voluntary.

Tuna Commissions

7.214 The report of the CCAMLR Observer to two CCSBT meetings held in 2000 and 2001 did not mention any activities relevant to seabird by-catch (CCAMLR-XX/BG/6). However, it did note that the CCSBT Ecologically-Related Species Working Group planned to reconvene in late 2001, after a long break, when it was expected that seabird by-catch would be discussed. The Working Group looked forward to receiving a detailed report in due course on mitigating measures in use and relevant observer programs in fisheries under the jurisdiction of CCSBT.

7.215 The Working Group was informed by a BirdLife International observer to a recent meeting of ICCAT's Scientific Committee that discussions of by-catch had been confined to shark and non-target fish species. The Working Group recommended that the Secretariat should be asked to write to ICCAT to place the issue of seabird by-catch and mitigating measures in use in fisheries under its jurisdiction on the agenda of the next meeting of its Scientific Committee. The Working Group would correspond intersessionally to provide an appropriate background paper for that meeting.

7.216 The Working Group considered it appropriate to receive information from the IOTC as seabird by-catch is known to occur in fisheries under its jurisdiction. The Working Group recommended that CCAMLR nominate an observer to meetings of the IOTC.

7.217 The Working Group requested the Scientific Committee to review interactions with fishery organisations, particularly newly established bodies, with responsibility for the conduct of fisheries in areas adjacent to the Convention Area, with a view to enhancing communication and collaboration with CCAMLR, particularly on seabird by-catch issues.

Advice to the Scientific Committee

General

7.218 (i) The plan of intersessional work (Appendix F) summarises requests to Members and others for information of relevance to the work of the Working Group (paragraphs 7.1 to 7.5).

(ii) 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 7.7).

Research into the Status of Seabirds at Risk

7.219 The review of the 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; and

(iii) genetic research relevant to determining the origin of birds killed in longline fisheries;

concluded that a comprehensive review of any of these topics cannot be completed until more Members have submitted details of their data. Relevant data are urgently requested for next year's meeting (paragraphs 7.3, 7.14, 7.21 and 7.23).

7.220 Important results from submitted information on the above topics are:

(i) a 25% decline in the population of black-browed albatrosses at the Falkland/Malvinas Islands, 18% in the last five years, is likely to result in the global conservation status of this species being changed from Near-Threatened to Vulnerable (paragraph 7.13);

(ii) substantial recent (1990s) declines (of 8–15%) are reported in populations of wandering and grey-headed albatrosses, northern and southern giant petrels and white-chinned petrels at Marion Island. The main causes are believed to be increased mortality in the recently increasing tuna longline fisheries in areas adjacent to the Convention Area and the recent large-scale IUU fisheries for toothfish close to the breeding site (paragraphs 7.15 and 7.16);

(iii) substantial (28%) declines of white-chinned petrel populations at South Georgia since the mid-1980s, attributed to similar causes to the above (paragraph 7.17);

(iv) the suggestion that mortality of adult female wandering albatrosses from Marion Island in temperate Southern Hemisphere tuna longline fisheries is the single most important factor compromising the conservation status of this population (paragraph 7.22);

(v) potential problems in ascribing origins of grey-headed albatrosses to any particular island population and of black-browed albatrosses beyond distinguishing specimens from the Falkland/Malvinas Islands and Campbell Island from other breeding sites (paragraph 7.23); and

(vi) declines in wandering albatross populations at Crozet and South Georgia and the recovery since 1986 of the Crozet population, both correlate with data on tuna longline fishing effort in adjacent regions of the Convention Area. The continuing decline of the South Georgia population is attributed to some combination of longline fishing for tuna in the poorly documented South Atlantic and for toothfish both inside and outside the Convention Area. Attempts to correlate seabird population changes with fishing effort are likely to be limited by the quality of the latter data (paragraphs 7.27 to 7.31).

Incidental Mortality of Seabirds during Regulated
Longline Fishing in the Convention Area in 2001

7.221 (i) Prompt submission by observers of good quality data ensured comprehensive analysis of this year's data (Tables 51 to 55).

(ii) For Subarea 48.3 the total estimated seabird by-catch was only 30 birds at a rate of 0.0014 birds/thousand hooks (paragraphs 7.38 and 7.39), very similar to last year's values; fishing season restrictions and continued improved compliance with Conservation Measure 29/XIX have kept by-catch in the regulated fishery in this subarea to negligible levels for the second successive year (paragraph 7.55).

(iii) For fishing within the South African EEZ in Subareas 58.6 and 58.7, the total estimated seabird by-catch was 199 birds (a 61% reduction over last year) at a rate of 0.018 birds/thousand hooks (compared with 0.022 birds/thousand hooks last year) (paragraphs 7.40 and 7.41). Reduced by-catch this year was mainly due to changes in fishing area (paragraph 7.45), but improved compliance with Conservation Measure 29/XIX also contributed (paragraph 7.56).

(iv) Based on analysis of timing of seabird incidental mortality in Subareas 58.6 and 58.7, the Working Group recommended that fishing within 200 n miles of the Prince Edward Islands be prohibited in the months of September to April inclusive. However, if South Africa still considered it necessary to maintain a regulated fishing presence within its EEZ around the Prince Edward Islands in order to deter IUU fishing, then regulated fishing within 200 n miles of the islands should be prohibited at least from January to April (paragraphs 7.49 to 7.52).

7.222 (i) Data from longline fishing within the French EEZs in Subarea 58.6 and Division 58.5.1 in the 1999 and 2000 seasons revealed a very serious seabird by-catch situation.

(ii) Overall by-catch rates were 0.736 birds/thousand hooks for 1998/99 and 0.184 birds/thousand hooks for 1999/2000 for the Crozet Islands and 2.937 birds/thousand hooks for 1998/99 and 0.304 birds/thousand hooks for 1999/2000 for the Kerguelen Islands (paragraph 7.59).

(iii) A total of 8 491 white-chinned petrels (99% of all birds) was reported killed (paragraph 7.60).

(iv) The totals of birds killed in the French EEZs in 1999 and 2000 were 17.2 and 4.2 times greater, respectively, than the total estimated seabird by-catches for the rest of the Convention Area; some monthly seabird by-catch rates exceed those used to estimate by-catch in the IUU fishery (paragraphs 7.62 and 7.63).

(v) The Working Group recommended that longline fishing within the French EEZs should be prohibited during the months of September to April inclusive (paragraph 7.64).

(vi) Submission to CCAMLR of the original data for 1999 and 2000, together with data from 2001, including information on mitigation measures in use in all three years, was requested (paragraph 7.65).

7.223 No incidental mortality of seabirds was observed in Subarea 88.1 for the fourth successive year due to strict compliance with conservation measures (paragraph 7.53).

Compliance with Conservation Measure 29/XIX

7.224 (i) Overall compliance with this conservation measure this year, compared to last year, was substantially improved in all subareas and divisions and was again complete in Subarea 88.1 (Table 56).

(ii) Streamer lines – compliance with streamer line design was 66%, double that last year. Vessels which have not complied with this element of the conservation measure over at least the last two years include *Argos Helena*, *Eldfisk*, *Isla Santa Clara*, *No. 1 Moresko* and *Aquatic Pioneer* (Tables 54 and 58 and paragraphs 7.67 to 7.69). Several vessels new to the fishery (*Polarpesca I*, *Suidor One* and *Rustava*) failed to comply with this simple and important measure (Table 58).

(iii) Offal discharge – in the whole Convention Area only the *Maria Tamara* (Subarea 48.3) failed to comply with the requirement either to hold offal on board, or to discharge on the opposite side to where the line was hauled; in Subareas 58.6, 58.7 and 88.1 there was again 100% compliance in this regard (Table 59 and paragraph 7.71). Although Conservation Measure 29/XIX requests vessels in Subareas 48.3, 58.6 and 58.7 to avoid the discharge of offal during the haul, on 86% of cruises there was discharge during hauls on an average of 91% of sets (paragraph 7.72). In Subarea 88.1 no vessels discharged offal at any time, as required under Conservation Measure 210/XIX.

(iv) Night setting – compliance improved in Subarea 48.3 from 87% last season to 95% and was maintained at 78% in Subareas 58.6 and 58.7. The *Koryo Maru 11* made 47% of sets during daylight hours on one cruise in Subareas 58.6 and 58.7 and caught more seabirds than any other vessel fishing in these subareas (paragraphs 7.73 to 7.75).

(v) Line weighting (Spanish system) – unlike all previous years when no vessel complied with the use of weights of 6 kg spaced at 20 m intervals, weights of 8.5 kg at 40 m were used on 21% of cruises in Subarea 48.3 and 18% of cruises in Subareas 58.6 and 58.7. Eight other vessels used line weightings that were close to compliance. One vessel complied with the 0.3 m/s line sink rate required in Subarea 88.1 (paragraphs 7.77 to 7.80 and Figure 35).

(vi) Line weighting (autoline system) – the requirement to achieve a line sink rate of 0.3 m/s when fishing in daylight in Subarea 88.1 south of 65°S was met by all vessels (paragraph 7.81).

7.225 (i) Four of 24 vessels (*Isla Gorriti*, *Janas*, *San Aotea II* and the *Sonrisa*) complied fully with all elements of the conservation measures that were applicable in the areas they fished (Table 59 and paragraph 7.84).

(ii) Historical compliance data (Table 59) and reports received by CCAMLR from observers and fishers indicate that all practical constraints relating to night setting, offal discharge, streamer line use and line weighting have now been overcome (paragraph 7.86).

(iii) Particular attention is drawn to vessels that have not complied with two or more of the elements of Conservation Measure 29/XIX for two or more consecutive years. These are: *Isla Camila*, *Isla Santa Clara*, *Koryo Maru 11*, *No. 1 Moresko*, *Argos Helena*, *Aquatic Pioneer* and *Isla Alegranza*. In addition, vessels in their first year in the fishery that failed to comply with two or more measures are *Polarpesca I*, *Suidor One*, *Maria Tamara*, *In Sung 66* and *Rutsava* (paragraph 7.89).

(iv) The Working Group recommended that vessels which do not comply with all elements of Conservation Measure 29/XIX should be prohibited from fishing in the CCAMLR Convention Area (paragraphs 7.87 and 7.88).

Fishing Seasons

7.226 On the basis of the data for the 2000/01 fishing season in Subarea 48.3, seabird by-catch levels were negligible for the second successive season. However, full compliance with Conservation Measure 29/XIX was not achieved so it was not possible to recommend an extension to the fishing season for 2001/02 in Subarea 48.3 (paragraphs 7.91 and 7.92). Nevertheless, full compliance should readily be achievable next year with small improvements to operational practice (paragraph 7.93).

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

7.227 (i) The estimates of potential seabird by-catch by area for 2001 (paragraphs 7.109 to 7.113, Tables 60 and 61) were:

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

(ii) The overall estimated totals for the whole Convention Area (paragraph 7.114 and Table 61) indicate a potential seabird by-catch in the unregulated fishery of 36 000–69 000 (lower level) to 48 000–90 000 birds (higher level) in 2000/01. This compares with totals of 17 000–27 000 (lower level) to 66 000–107 000 (higher level) in 1996/97, 43 000–54 000 (lower level) to 76 000–101 000

(higher level) in 1997/98, 21 000–29 000 (lower level) to 44 000–59 000 (higher level) in 1998/99, and 33 000–63 000 (lower level) to 43 000–83 000 (higher level) in 1999/2000.

(iii) The species composition of the estimated potential seabird by-catch (Table 62) indicates a potential by-catch of 40 500–89 500 albatrosses, 7 000–15 000 giant petrels and 109 000–275 000 white-chinned petrels in the IUU fishery in the Convention Area over the last five years (paragraph 7.120).

(iv) The Working Group endorsed its conclusions of recent years that such levels of mortality remain entirely unsustainable for the populations of albatrosses, giant petrels and white-chinned petrels breeding in the Convention Area (paragraph 7.122), many of which are declining at rates where extinction is possible.

(v) The Working Group recommended that the Commission take even more stringent measures to combat IUU fishing in the Convention Area (paragraph 7.123).

Incidental Mortality of Seabirds in relation
to New and Exploratory Fisheries

7.228 (i) Of the seven exploratory longline fisheries approved for 2000/01, only that in Subarea 88.1 was operational in 2000/01; no seabird by-catch was reported in this fishery (paragraphs 7.129 and 7.130).

(ii) The assessment of potential risk of interactions between seabirds and longline fisheries for all statistical areas in the Convention Area was reviewed, revised and provided as advice to the Scientific Committee and Commission in SC-CAMLR-XX/BG/11. There had been no changes to this advice in relation to levels of risk of seabird by-catch for any part of the Convention Area (paragraph 7.128).

(iii) The 24 proposals by eight Members for new and exploratory longline fisheries in 14 subareas/divisions of the Convention Area in 2001/02 were addressed, in relation to advice in SC-CAMLR-XX/BG/11 and Table 63.

(iv) The potential problems which need resolving (paragraphs 7.133 to 7.137) are:

(a) to check that France intends to comply with Conservation Measure 29/XIX, rather than Conservation Measure 29/XVI as indicated, for Subarea 58.6 and Divisions 58.4.3 and 58.4.4;

(b) whether or not Japan intends to comply with Conservation Measure 29/XIX and to use an international scientific observer in Subareas 48.6, 58.6, 88.1 and 88.2, and Divisions 58.4.1, 58.4.3 and 58.4.4 (note that Japan's intention is clarified, positively, in paragraph 7.134);

(c) clarification of fishing season in respect of South Africa's applications for Subarea 58.6 and Division 58.4.4; and

(d) applications for variations from Conservation Measure 29/XIX (e.g. similar to Conservation Measure 210/XIX) for Subareas 48.6, 88.1, 88.2 and Division 58.4.4.

7.229 (i) The Working Group recommended the continuation of Conservation Measure 210/XIX for exploratory fishing in Subarea 88.1 (paragraph 7.136).

(ii) It recommended that similar conservation measures should be developed for exploratory fishing in Subareas 48.6 and 88.2 and Division 58.4.4, retaining a strict precautionary limit on seabird by-catch (paragraphs 7.137 to 7.139).

(iii) It recommended the adoption of a simpler method for testing line sink rates (paragraph 7.140 and Appendix G).

Incidental Mortality of Seabirds during Longline Fishing outside the Convention Area

7.230 (i) Japanese and Taiwanese vessels longline fishing for tuna in the South African mainland EEZ are estimated to kill annually 19 000–30 000 seabirds, including black-browed albatrosses and white-chinned petrels from the Convention Area. By-catch rates on Japanese vessels were 2.64 birds/thousand hooks; failure to use streamer lines was reported (paragraphs 7.143 to 7.146).

(ii) Reports were received from New Zealand and the Falkland/Malvinas Islands on low levels of seabird by-catch observed in domestic longline fisheries; a report from Australia indicated a 48% increase in tuna longline fishing effort in the AFZ in 1999, but without observers no reliable by-catch data were available for this fishery (paragraphs 7.148 to 7.150).

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

Research into and Experience with Mitigating Measures

7.231 (i) Offal discharge – scupper screens should be used to prevent discharge of offal and bait from vessels while processing catch (paragraph 7.161). Hooks, increasingly abundant in regurgitates from albatross chicks, should be removed from fish heads prior to discard; this recommendation should be added to appropriate conservation measures (paragraph 7.162).

(ii) Streamer lines – a video of the successful New Zealand boom and bridle system should be circulated to fishers via technical coordinators (paragraph 7.163); paired lines have proved superior to single lines when tested in Alaskan demersal longline fisheries and should be tested in the Convention Area (paragraph 7.164).

(iii) Bait – further trials (paragraphs 7.165 to 7.168) are endorsed and more data requested on circumstances of bait loss (paragraph 7.169).

(iv) Underwater setting – *Eldfisk* continues to use the Mustad funnel with success on day sets in the Convention Area and the same device performed well in Alaskan trials (paragraph 7.170); full trials of the Australian chute system are in progress on 10 vessels, earlier trials giving a 96% reduction in baits taken (paragraph 7.171).

(v) Line weighting –

(a) several vessels fishing in the Convention Area last year were able to comply with the revised line weighting system of 8.5 kg at 40 m intervals (paragraphs 7.75 to 7.78 and 7.173); when complying, only one of seven cruises recorded seabird by-catch, whereas six of 15 cruises recorded seabird by-catch when not complying (paragraph 7.174);

(b) all autoliners (and one Spanish system vessel) fishing in Subarea 88.1 achieved line sink rates of 0.3 m/s. The predictive model of sink rate was further developed (paragraphs 7.173 and 7.182);

(c) a new simple means of measuring line sink rate should enable predictive sink rate models to be developed for the Spanish longline system (paragraphs 7.176 and 7.183);

(d) several reports of other investigations of line sink rates were received, all broadly confirming existing results for the Convention Area (paragraphs 7.176, 7.177 and 7.181); and

(e) trials in New Zealand of a Norwegian-manufactured sample integrated autoline weighting system will take place shortly (paragraphs 7.179 and 7.180).

7.232 In response to the Scientific Committee's request last year, a proposal has been developed for rigorous experiments on the effects of the different elements of Conservation Measure 29/XIX, when applied to the Spanish longline system, in reducing seabird mortality. The Working Group strongly requested Members to support this proposed study (paragraphs 7.186 to 7.188).

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

7.233 (i) International Fishers' Forum – Members were encouraged to disseminate information on this successful meeting by way of articles in fishery magazines and journals (paragraphs 7.191 to 7.194).

(ii) Agreement on the Conservation of Albatrosses and Petrels – CCAMLR Members who are range states (including distant-water fishing nations that interact with Southern Hemisphere albatrosses and petrels on the high seas) were encouraged to sign and ratify the agreement as soon as possible (paragraphs 7.195 to 7.198).

(iii) FAO NPOA–Seabirds – concern was expressed at the lack of progress by CCAMLR Members towards implementation of NPOAs (requested by the Commission for February 2001), with the exception of Japan, New Zealand and the USA, who had either adopted or developed plans, and Australia, whose Threat Abatement Plan serves in lieu for the time being. The other relevant CCAMLR Members were urged to produce, adopt and implement plans as soon as possible (paragraphs 7.195 to 7.206). The Japanese plan was regarded as inadequate, in respect of mitigation measures, to reduce seabird by-catch to acceptably low levels, specifically in areas frequented by seabirds from the Convention Area (paragraphs 7.209 to 7.212); further details were requested in this regard (paragraph 7.213).

(iv) Tuna Commissions – details of seabird by-catch, mitigation measures in use and relevant observer programs were requested from forthcoming meetings of CCSBT, ICCAT and IOTC (paragraphs 7.214 to 7.216).

(v) Other fishery organisations – request to develop links with organisations responsible for fisheries in areas adjacent to the Convention Area (paragraph 7.217).

Table 3: Reported catches (tonnes) of *Dissostichus eleginoides* and *Dissostichus mawsoni* by Members and Acceding States, and estimates of unreported catches by Members and Acceding States in the 2000/01 split-year. Catches for the 1999/2000 split-year are given in parentheses. The information in this table may be incomplete[1].

Flag State	Outside Convention Area		Convention Area				Estimated Catch All Areas	
			Reported Catch		Estimates of Unreported Catches by Members			
Chile	9 044	(2 704)	531	(1 609)	0	(0)	9 575	(4 313)
Argentina	6 413	(4 667)	0	(0)	0	(0)	6 413	(4 667)
France	0	(0)	6 634	(5 503)	0	(0)	6 634	(5 503)
Australia	26	(82)	1 765	(2 579)	0	(0)	1 791	(2 661)
South Africa	0	(180)[2]	1 040	(1 239)	0	(0)	1 040	(1 419)
UK	1 286[3]	(3 919)[3]	900	(1 221)	0	(0)	2 186	(5 140)
Uruguay	4 359	(0)	582	(767)	0	(0)	4 941	(767)
Ukraine	24	(0)	164	(128)	0	(0)	188	(128)
Spain	213	(0)	487	(264)	0	(0)	700	(264)
Rep. of Korea	3 170	(0)	467	(380)	0	(0)	3 637	(380)
Peru	167	(0)	0	(0)	0	(0)	167	(0)
New Zealand	0	(<1)	612	(751)	0	(0)	612	(751)
Russia	2 612	(-)	89	(-)	0	(-)	2 701	(-)
Seychelles	2 838						2 838	
Various countries							108[4]	
Unknown								(5 765)[5]
All countries	30 152	(11 553)	13 271	(14 441)	0	(0)	43 531	(31 758)[5]

[1] Data from CDS and CCAMLR catch reports
[2] Catch in EEZ
[3] From Falkland/Malvinas Islands and St Helena
[4] CDS data, area of catch not known
[5] Revised estimate to include landing data reported by Mauritius for January–October 2000 after WG-FSA-2000, pro-rated for the relevant portion of the split-year. Catch areas are an unknown combination of inside and outside the CCAMLR Convention Area.

Table 4: Estimated effort, mean catch rates/day and total catches by subarea/division in the unregulated fishery on *Dissostichus eleginoides* in the 2000/01 split-year. Estimates for the 1999/2000 split-year are given in parentheses. The total estimated unreported catch in 2000/01 is 7 599 tonnes. The total reported catch for the CCAMLR Convention Area in 2000/01 is 13 271 tonnes. The estimated total catch for the CCAMLR Convention Area in 2000/01 is 20 870 tonnes.

Area/ Subarea/ Division	Estimated Start of Unregulated Fishery	No. of Vessels Sighted in Unregulated Fishery[4,5]		No. of Licensed Fishing Vessels		Estimated No. of Vessels Fishing Illegally		No. of Days Fishing per Fishing Trip	No. of Trips/Year	Estimated Effort in Days Fishing[2] (1)		Mean Catch Rate per Day[3] (tonnes) (2)	Estimated Unreported Catch (1) x (2)		Estimated Total Catch[1]	
48.6	No info															
48.3	1991	0	(5)	15	(18)	1	(5)	40	2.5	100	(180)	3.0	300[6]	(396)	3 559	(5 090)
58.7	Apr–May 1996	1[7]	(1)	4	(3)	1	(2)	40	2.5	100	(200)	1.5	150	(220)	882	(940)
58.6	Apr–May 1996	5[7]	(7)	6	(5)	6[8]	(11)[2]	40	2.5	600	(1 100)	1.1	660	(1 980)	2 136	(2668)
58.5.1	Dec 1996	18	(7)	0	(0)	11	(7)	40	2.5	1 100	(700)	3.0	3 300	(2 100)	8 515	(7 109)
58.5.2	Feb–Mar 1997	5	(2)[9]	2[10]	(2)	5	(4)						1 649[11]	(800)	3 414	(3 379)
58.4.4	Sep 1996	0	(1)	1	(1)	7[12]	(7)	40	2.5	700	(700)	2.2	1 540	(1 050)	1 704	(no data)
88.1															660	(751)
Total													7 599	(6 546)	20 870	(19 937)

1 Estimated total catch = estimated unreported catch plus reported catch
2 Calculated as number of vessels fishing illegally x number of fishing days/trip x number of trips/year
3 Data from Secretariat. Subareas 58.7/58.6 based on data from South Africa's EEZ
4 Vessel sightings (sources): Prof. G. Duhamel (France), observers (South Africa), AFMA
5 This may include more than one sighting of the same vessel
6 Estimated upper limit
7 Minimum number vessels detected on radar
8 Estimated number of vessels not in area throughout period, but moving between areas
9 Two vessels sighted; one with 125 tonnes on board and the other estimated to have 346 tonnes on board
10 Trawl fishery by sanctioned vessels
11 Calculated from verified catch weights of two arrested vessels and an estimated catch of 1 290 tonnes from three unidentified vessels with an estimated hold capacity of 430 tonnes green weight. By contrast, by applying a similar estimation procedure as for other subareas, an estimated catch of 600 tonnes was obtained assuming a fishing trip duration of 40 days, a catch per day of 2 tonnes and 2.5 fishing trips per year.
12 No sightings, but reports of vessels in area

Table 5: Estimated total catch (tonnes) by subarea/division of *Dissostichus eleginoides* and *Dissostichus mawsoni* inside[1] and outside[2] the Convention Area for the 2000/01 split-year. Estimates for the 1999/2000 split-year, where available, are in parentheses.

Subarea/ Division	Estimated Total Catch		Reported Catch 2000/01		Estimated Unreported Catch		Unreported Catch as % of the Estimated Total Catch
48.1	-	(-)	0	(-)	probably low		
48.2	-	(-)	0	(-)	probably low		
48.3	3 559	(5 090)	3 259	(4 694)	300	(396)	9
58.4.4	1 704	(-)	164	(-)	1 540	(1 050)	90
58.5.1	8 515	(7 109)	5 215	(5 009)	3 300	(2 100)	39
58.5.2	3 414	(3 379)	1 765	(2 579)	1 649	(800)	48
58.6	2 136	(2 668)	1 476	(688)	660	(1 980)	31
58.7	882	(940)	732	(720)	150	(220)	17
88.1	660	(751)	660	(751)	probably low		
CCAMLR subareas[1]	20 870[1]	(19 937)[1]	13 271	(14 441)	7 599	(6 546)	39
41	11 839[3]						
47	292						
51	9 469[4]						
57	731						
81	27						
87	7 793						
Non-CCAMLR subareas[2]	30 151						
Unknown area	108	(5 765)[5]					
Total all subareas	51 129	(25 702)	13 271	(14 441)	7 599	(6 546)	

[1] CCAMLR catch report data
[2] Data from CDS, rounded to the nearest tonne
[3] Includes 1 412 tonnes reported by Chile
[4] Includes an undetermined catch from the portion of the South African EEZ around the Prince Edward Islands which falls within Area 51.
[5] 5 765 tonnes reported by Mauritius at CCAMLR-XIX after WG-FSA-2000

Table 6: Catches by subarea and year for reported, estimated unreported and estimated total catches (tonnes) of *Dissostichus eleginoides*.

Year	Reported	Estimated Unreported	Estimated Total
Subarea 58.6			
1996/97	333	18 900	19 233
1997/98	175	1 765	1 940
1998/99	1 852	1 748	3 600
1999/00	688	1 980	2 668
2000/01	1 476	660	2 136
Total	4 524	25 053	29 577
Subarea 58.7			
1996/97	2 229	11 900	14 129
1997/98	576	925	1 501
1998/99	205	140	345
1999/00	720	220	940
2000/01	732	150	882
Total	4 462	13 335	17 797
Division 58.5.1			
1996/97	4 681	2 000	6 681
1997/98	4 751	11 825	16 576
1998/99	5 402	620	6 022
1999/00	5 009	2 100	7 109
2000/01	5 215	3 300	8 515
Total	25 058	19 845	44 903
Division 58.5.2			
1996/97	837	7 200	8 037
1997/98	2 418	7 000	9 418
1998/99	5 451	160	5 611
1999/00	2 579	800	3 379
2000/01	1 765	1 649	3 414
Total	13 050	16809	29 859
Subarea 48.3			
1996/97	2 389	0	2 389
1997/98	3 328	0	3 328
1998/99	4 581	350	4 931
1999/00	4 694	396	5 090
2000/01	3 559	300	3 859
Total	18 551	1 046	19 597

Table 7: Reported, estimated unreported and estimated total catches (tonnes) of *Dissostichus eleginoides* by subarea/division for the period 1996/97 to 2000/01.

Subarea/Division	Reported	Estimated Unreported	Estimated Total
Subarea 58.6	4 524	25 053	29 577
Subarea 58.7	4 462	13 335	17 797
Division 58.5.1	25 058	19 845	44 903
Division 58.5.2	13 050	16809	29 859
Total	47 094	75 042	122 136
Subarea 48.3	18 551	1 046	19 597

Table 8: Reported *Dissostichus* spp. landings in FAO Area 51 by Flag State and port of landing for the 2000/01 split-year. (CDS data from the Secretariat.)

Port	No. of Flag States	No. of Landings	Verified Product Weight Landed (tonnes)[2]	Estimated[1] Live Weight (tonnes)[2]
Port Louis	4	5	4 704	6 887
Jakarta	1	1	248	397
Singapore	1	1	575	577
Walvis Bay	2	2	260	369
Montevideo	1	2	216	274
Priok	1	1	602	965
Total	6	12	6 605	9 469

[1] Conversion factors used were FLT = 2.3, GUT = 1.1, HAG = 1.6, HAT = 1.7, HGT = 1.7, OTH = 0, WHO = 1

[2] Rounded to the nearest whole tonne

Table 9: Estimated live weight (tonnes) of *Dissostichus* spp. reported in the CDS data for the 2000 and 2001 calendar years.

Year/Month	Area/Subarea/Division																			Total
	41	47	47.4	48	48.3	48.4	48.5	51	57	58.4.4	58.5.1	58.5.2	58.6	58.6/7	58.7	81	83	87	88.1	
2000																				
January	9											518						351		877
February	367										489							781		1 148
March	465								6		234	1 096						444	670	2 069
April	564	308																147		2 355
May	635				36						542		419		44			212		1 888
June	862	28		258	1 847			657			1 227	1 007	4	221				198		6 309
July	578				2 001			560	83		1 035							168		4 424
August	1 368				1 461	36		982	8	98	280		219		131			352		4 936
September	1 238												330	41				404		2 013
October	2 231	287						630	189	21	499	442			82			1 337		5 717
November	2 535							928	141		751	82	144	109	94			1 090		5 875
December	1 081							87			750		488		61			1 201		3 668
Total for 2000	11 933	624	0	258	5 345	36	0	3 844	427	118	5 807	3 144	1 603	371	412	0	0	6 685	670	41 280
2001																				
January	1 075							1 853	168	34	69		369					941		4 508
February	351							220			587	609						562		2 329
March	1 279	5			9			867			292					1	1	482	314	3 249
April	657				8			4 182	292		989		210	13	42			524	223	7 139
May	1 396				130			361			274	607	122	1		26		243	62	3 223
June	728				800							205		31				547		2 310
July	422		71		1 088			1 823			373	193	8		75			137		4 190
August	777				1 076			1 886	340						35			176		4 291
September	429				879			837						33				71		2 249
Total for 2001	7 115	5	71	0	3 992	0	0	12 028	799	34	2 585	1 614	708	78	152	27	1	3 681	599	33 489

Table 10: Seabed areas within the geographic range of *Dissostichus eleginoides*. Bathymetry data source: Sandwell and Smith 2 x 2 minute grids; analysis of seabed areas within the CCAMLR Convention Area: *Statistical Bulletin*, Vol. 13 (2001); analysis of seabed areas outside the CCAMLR Convention Area: CCAMLR Secretariat, April 1999.

Ocean	Area	Boundaries				Seabed Area (km^2) within depth range		
		North	South	West	East	0–500 m	500–600 m	600–1 800 m
Within the CCAMLR Convention Area								
Southwest Atlantic	48.3 Maurice Ewing Bank	50°S	52.3°S	50°W	30°W	0	0	34 608
Southwest Atlantic	48.3 south of Maurice Ewing Bank	52.3°S	57°S	50°W	30°W	0	2 415	32 025
Western Indian	58.7	45°S	50°S	30°E	40°E	1 650	273	12 655
Western Indian	58.6	45°S	50°S	40°E	60°E	18 148	1 964	71 295
Western Indian	58.5.1	45°S	49–53°S	60°E	80°E	117 768	31 416	124 428
Western Indian	58.5.2	49–53°S	55°S	60°E	80°E	46 627	10 974	111 106
Total						184 193	47 042	386 117
Outside the CCAMLR Convention Area								
Western Indian	51	40°S	45°S	30°E	80°E	2	12	30 007
Southwest Atlantic	41	50°S	60°S	70°W	50°W	416 586	18 233	115 838
Total						416 588	18 245	145 845

Table 11: Reported catch versus landed weights (tonnes) for *Dissostichus eleginoides* in Area 48 for the 2000 and 2001 calendar years. It should be noted that the CDS entered into force in May 2000 and no information on landings is therefore available prior to that date. In addition, there is likely to be a time lag between catch reports and landing reports from the CDS.

Year/Month	Catch	Cumulative Catch	Landing	Cumulative Landing
2000				
March	4	4	0	0
April	13	17	0	0
May	1 698	1 715	36	36
June	2 211	3 926	2 105	2 141
July	1 303	5 229	2 001	4 142
2001				
January	4	4	0	0
February	6	10	0	0
March	7	17	9	9
April	20	37	8	17
May	1 294	1 331	130	147
June	989	2 320	800	947
July	970	3 290	1 088	2 035
August	748	4 038	1 076	3 111
September	11	4 049	879	3 990
October	1	4 050	0	3 990

Table 49: Summary of data on seabird species at risk from longline fisheries in the Convention Area, indicating the level of information available on population parameters, DNA profile and conservation status (BirdLife International (2000) and WG-FSA-01/55). (Information extracted from documents cited in SC-CAMLR-XVIII, Annex 5; SC-CAMLR-XIX, Annex 5; SC-CAMLR-XX, Annex 5; also Gales, 1998; Marchant and Higgins, 1990).

Species	Conservation Status	Study Location	DNA Profile	Population Information					
				Annual Pairs	Year Started	Population Estimate	Trend	Adult Survival	Juvenile Survival
Wandering albatross	Vulnerable	South Georgia	√	2 178	1972	√	√	√	√
Diomedea exulans		Marion	√	1 794	1998	√	√		
		Prince Edward	√	1 277	1979	√			
		Crozet	√	1 734	1966	√	√	√	√
		Kerguelen		1 455	1973	√	√	√	√
		Macquarie	√	10	1994	√	√	√	
Antipodean albatross	Vulnerable	Auckland	√	65	1991	√	√	√	
Diomedea antipodensis		Adams		5 762					
		Antipodes	√	5 148	1994	√	√	√	
Amsterdam albatross	Critically Endangered	Amsterdam		13	1983	√	√	√	√
Diomedea amsterdamensis									
Southern royal albatross	Vulnerable	Campbell	√ ?	7 800	1995	√	√		
Diomedea epomophora		Auckland Islands	√ ?	<100					
Northern royal albatross	Endangered	Chatham	√ ?	5 200	1990s	√	√	check	check
Diomedea sanfordi		Taiaroa	√ ?	18	1950s	√	√	√	√
Grey-headed albatross	Vulnerable	Diego Ramirez	√	10 000	1999	√			
Thalassarche chrysostoma		South Georgia	√	54 218	1976	√	√	√	√
		Marion	√	6 217	1984	√	√	√	√
		Prince Edward		1 500					
		Crozet		5 946	1980				
		Kerguelen	√	7 900					
		Macquarie	√	84	1994	√	√	√	
		Campbell	√	6 400	1987	√			

(continued)

Table 49 (continued)

Species	Conservation Status	Study Location	DNA Profile	Population Information					
				Annual Pairs	Year Started	Population Estimate	Trend	Adult Survival	Juvenile Survival
Black-browed albatross	Near-	Diego Ramirez	√	32 000	1999	√			
Thalassarche melanophrys	Threatened	Falklands/Malvinas	√	550 000	1990	√	√	√	√
		South Georgia	√	96 252	1976	√	√	√	√
		Crozet		980					
		Kerguelen	√	3 115	1978	√	√	√	√
		Heard, McDonald		750					
		Macquarie	√	38	1994	√	√	√	
		Campbell	√	<30	1995				
		Antipodes		100	1995	√			
Campbell albatross	Vulnerable	Campbell	√	26 000	1987	√		√	
Thalassarche impavida									
Atlantic yellow-nosed albatross	Near-	Tristan da Cunha	√	27 000					
Thalassarche chlororhynchos	Threatened	Gough	√	46 000	1982		√	√	
Indian yellow-nosed albatross	Vulnerable	Amsterdam		25 000	1978	√	√	√	√
Thalassarche carteri		Prince Edward		7 000					
		Crozet		4 430					
Buller's albatross	Vulnerable	Snares		8 460	1992	√	√	√	
Thalassarche bulleri		Solander		4 000–5 000	1992	√			
Chatham albatross	Critically	Chatham	√	4 000	1998	√			
Thalassarche eremita	Endangered								
Salvin's albatross	Vulnerable	Bounty		76 000	1998	√			
Thalassarche salvini		Ile des Pingouins, Crozet		4					
		Snares		4 650					
White-capped albatross	Vulnerable	Antipodes	√	75	1972	√	√		
Thalassarche steadi		Disappointment	√	72 000					
		Adams	√	100					
		Auckland		3 000	1994	√			

(continued)

Table 49 (continued)

Species	Conservation Status	Study Location	DNA Profile	Population Information					
				Annual Pairs	Year Started	Population Estimate	Trend	Adult Survival	Juvenile Survival
Light-mantled albatross *Phoebetria palpebrata*	Near-Threatened	South Georgia		6 500					
		Marion		201					
		Prince Edward							
		Crozet		2 151	1966	√	√	√	√
		Kerguelen		3 000–5 000	1994	√	√	√	
		Heard, McDonald		500–700					
		Macquarie	√	1 100	1993	√	√	√	
		Campbell		>1 500	1995	√	√		
		Auckland		5 000	1972	√			
		Antipodes		<1 000	1995	√			
Sooty albatross *Phoebetria fusca*	Vulnerable	Tristan da Cunha		2 750					
		Gough		5 000–10 000	2000	√			
		Marion		2 055					
		Prince Edward		700					
		Crozet		2 298	1968	√	√	√	√
		Amsterdam		300–400	1992	√	√	√	
Southern giant petrel *Macronectes giganteus*	Vulnerable	Antarctic Peninsula		1 125					
		Enderby Land		no estimate					
		Frazier		250					
		Adélie Land		9–11	1964	√			
		South Shetland		7 185					
		South Orkney		8 755	1976	√			
		South Sandwich		800					
		Falklands/Malvinas		5 000					
		South Georgia		5 000	1980	√	√	√	
		Gough							
		Marion		1 500	1984	√	√		
		Prince Edward							
		Crozet		1 017	1981	√	√		
		Kerguelen		3–5					
		Heard		2 350					
		Macquarie		2 300	1994	√	√		

(continued)

Table 49 (continued)

Species	Conservation Status	Study Location	DNA Profile	Population Information					
				Annual Pairs	Year Started	Population Estimate	Trend	Adult Survival	Juvenile Survival
Northern giant petrel	Near-	South Georgia		3 000	1980	√	√	√	
Macronectes halli	Threatened	Marion		350	1984	√	√		
		Prince Edwards							
		Crozet			1981	√			
		Kerguelen		1 450–1 800	1986	√			
		Macquarie		1 313	1994	√	√		
		Campbell		230+					
		Auckland		no estimate					
		Antipodes		320					
		Chatham		no estimate					
White-chinned petrel	Vulnerable	Falklands/Malvinas		1 000–5 000					
Procellaria aequinoctialis		South Georgia		2 000 000	1995	√	√		
		Prince Edwards		10 000s	1996	√	√		
		Crozet		10 000s	1968	√	√		
		Kerguelen		100 000s					
		Auckland, Campbell, Antipodes							
Grey petrel	Near-	Tristan da Cunha		1 000s					
Procellaria cinerea	Threatened	Gough		100 000s					
		Prince Edwards		1 000s					
		Crozet		1 000s					
		Kerguelen		1 000s					
		Macquarie		<100					
		Campbell		10 000s					
		Antipodes		10 000s					

Table 50: Summary of data on seabird species at risk from longline fisheries in the Convention Area, indicating the level of information available on foraging ecology in respect of years of study, stage of breeding cycle, CCAMLR areas visited and risk assessment (SC-CAMLR-XX/BG/11) of these areas. (Information extracted from documents cited in SC-CAMLR-XVIII, Annex 5; SC-CAMLR-XIX, Annex 5; SC-CAMLR-XX, Annex 5; also Gales, 1998; Marchant and Higgins, 1990). nr – not recorded.

Species	Study Location	Foraging Ecology					CCAMLR Area Prospected (*IMALF risk assessment*)																
		Data	Years	Trips			48.1	48.2	48.3	48.4	48.5	48.6	58.4.1	58.4.2	58.4.3	58.4.4a	58.4.4b	58.5.1	58.5.2	58.6	58.7	88.1	88.2	88.3
				Incubation	Chick Brood	Non-Breeding	*3*	*2*	*5*	*3*	*1*	*2*	*3*	*2*	*3*	*3*	*3*	*5*	*4*	*5*	*5*	*3*	*1*	*1*
Wandering albatross *Diomedea exulans*	South Georgia	v	1990–2000	15	152		●	●	●	●		●												●
	Marion	v	1996–1998	nr	nr																			
	Prince Edward																							
	Crozet	v	nr	nr	nr									●	●	●		●	●	●	●			
	Kerguelen	v	nr	nr	nr																			
	Macquarie																							
Antipodean albatross *Diomedea antipodensis*	Auckland	v	nr																					
	Adams																							
	Antipodes	v	nr																					
Amsterdam albatross *Diomedea amsterdamensis*	Amsterdam	v	nr															●	●					
Southern royal albatross *Diomedea epomophora*	Campbell	v	nr																					
	Auckland Islands																							
Northern royal albatross *Diomedea sanfordi*	Chatham	v	nr																					
	Taiaroa	v	nr																					
Grey-headed albatross *Thalassarche chrysostoma*	Diego Ramirez																							
	South Georgia	v	1991–2000	4	240		●	●	●	●		●												
	Marion	v	1997–1998	nr	nr																			
	Prince Edward																							
	Crozet																							
	Kerguelen																							
	Macquarie	v	2000–2001	9	3																	●		
	Campbell																							
Black-browed albatross *Thalassarche melanophrys*	Diego Ramirez	v	1999	nr	nr																			
	Falklands/Malvinas	v	nr	nr	nr																			
	South Georgia	v	1993–1994	11	73		●	●	●	●														
	Crozet																							
	Kerguelen	v	nr	nr	nr																			
	Heard, McDonald																							
	Macquarie	v	2000–2001	10	5																	●		
	Antipodes																							
	Campbell																							
Atlantic yellow-nosed albatross *Thalassarche chlororhynchos*	Tristan da Cunha																							
	Gough																							
Campbell albatross *Thalassarche impavida*	Campbell	v	1995	nr	nr																			

(continued)

Table 50 (continued)

Species	Study Location	Foraging Ecology					CCAMLR Area Prospected (*IMALF risk assessment*)															
		Data	Years	Trips			48.1	48.2	48.3	48.4	48.5	48.6	58.4.1	58.4.2	58.4.3	58.4.4a	58.4.4b	58.5.1	58.5.2	58.6	58.7	88.1	88.2	88.3
				Incubation	Chick Brood	Non-Breeding	*3*	*2*	*5*	*3*	*1*	*2*	*3*	*2*	*3*	*3*	*3*	*5*	*4*	*5*	*5*	*3*	*1*	*1*
Indian yellow-nosed albatross *Thalassarche carteri*	Prince Edward Crozet Amsterdam	v	nr	nr	nr																			
Buller's albatross *Thalassarche bulleri*	Snares Solander	v v	nr nr	nr nr	nr nr																			
Chatham albatross *Thalassarche eremita*	Chatham	v	nr	nr	nr																			
Salvin's albatross *Thalassarche salvini*	Ile des Pingouins, Crozet Bounty Snares																							
White-capped albatross *Thalassarche steadi*	Antipodes Disappointment Adams Auckland																							
Light-mantled albatross *Phoebetria palpebrata*	South Georgia Marion Prince Edward Crozet Kerguelen Heard, McDonald Macquarie Campbell Auckland Antipodes	v	nr	nr	nr																			
Sooty albatross *Phoebetria fusca*	Tristan da Cunha Gough Marion Prince Edward Crozet Amsterdam	v	nr	nr	nr																			

(continued)

Table 50 (continued)

Species	Study Location	Foraging Ecology					CCAMLR Area Prospected (*IMALF risk assessment*)																
		Data	Years	Trips			48.1	48.2	48.3	48.4	48.5	48.6	58.4.1	58.4.2	58.4.3	58.4.4a	58.4.4b	58.5.1	58.5.2	58.6	58.7	88.1	88.2	88.3
				Incubation	Chick Brood	Non-Breeding	*3*	*2*	*5*	*3*	*1*	*2*	*3*	*2*	*3*	*3*	*3*	*5*	*4*	*5*	*5*	*3*	*1*	*1*
Southern giant petrel *Macronectes giganteus*	Antarctic Peninsula Enderby Land Frazier Adélie Land South Shetland South Orkney South Sandwich Falklands/Malvinas South Georgia Gough Marion Prince Edward Crozet Kerguelen Heard Macquarie	v	1996–1998	13		1	●	●	●	●		●				●								
Northern giant petrel *Macronectes halli*	South Georgia Marion Prince Edward Crozet Kerguelen Macquarie Campbell Auckland Antipodes Chatham	v	1998	18				●	●	●		●												
White-chinned petrel *Procellaria aequinoctialis*	Falklands/Malvinas South Georgia Prince Edwards Crozet Kerguelen Auckland, Campbell, Antipodes	v v v	1996–1998 nr nr	5 nr nr	20 nr nr			●	●	●														
Grey petrel *Procellaria cinerea*	Tristan da Cunha Gough Prince Edwards Crozet Kerguelen Macquarie Campbell Antipodes																						

Table 51: Incidental mortality of seabirds in the longline fisheries for *Dissostichus* spp. in Subareas 48.3, 58.6, 58.7 and 88.1 during the 2000/01 season. Sp – Spanish method; Auto – autoliner; N – night setting; D – daylight setting (including nautical dawn and dusk); O – opposite side to hauling; S – same side as hauling; * – information obtained from cruise report; + – all daylight settings in Subarea 88.1 were in compliance with the provisions of Conservation Measure 210/XIX.

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 (%)	
			N	D	Total	%N	Obs.	Set	% Observed		Dead N	Dead D	Alive N	Alive D	Total N	Total D	N	D	Total	N	D		
Subarea 48.3																							
Argos Georgia	7/6–25/7/01	Sp	212	2	214	99	229.5	1 083.3	21	100	0	0	1	0	1	0	0	0	0	92	100	O	(83)
Argos Helena	4/5–21/8/01	Sp	171	0	171	100	299.3	1 343.6	22	100	3	0	11	0	14	0	0.010	0	0.010	99		O	(100)
Ibsa Quinto	3/5–11/7/01	Sp	115	0	115	100	190.2	1 161.1	16	100	2	0	8	0	10	0	0.011	0	0.011	100		O	(85)
In Sung 66	1/5–6/7/01	Sp	101	4	105	96	148.1	795.9	18	100	0	0	0	0	0	0	0	0	0	99	100	O	(98)
In Sung 66	8/7–11/9/01	Sp	88	5	93	95	111.4	729.2	15	100	0	0	0	0	0	0	0	0	0	92	100	O	(96)
Isla Alegranza	1/5–30/8/01	Sp	161	18	179	90	380.1	1 550.9	24	100	1	0	6	0	7	0	0.003	0	0.003	25	17	O	(99)
Isla Camila	12/6–20/7/01	Sp	40	2	42	95	53.1	205.1	25	100	0	0	0	0	0	0	0	0	0	89	0	O	(0)
Isla Camila	1/5–28/5/01	Sp	52	2	54	96	67.5	359.8	18	100	0	0	0	0	0	0	0	0	0	96	100	O	(96)
Isla Santa Clara	30/6–17/7/01	Sp	40	2	42	95	43.2	259.8	16	100	0	0	0	0	0	0	0	0	0	100	100	O	(93)
Isla Santa Clara	1/5–30/6/01	Sp	106	9	115	92	131.7	855.0	15	100	0	0	0	0	0	0	0	0	0	95	89	O	(96)
Koryo Maru 11	21/5–31/8/01	Sp	218	8	226	96	265.9	1 769.6	15	100	0	0	0	0	0	0	0	0	0	93	100	O	(76)
Maria Tamara	14/7–20/7/01	Sp	5	0	5	100	21.0	66.6	31	100	0	0	0	0	0	0	0	0	0	100		S	(100)
No. 1 Moresko	17/7–30/8/01	Sp	76	0	79	100	142.4	646.1	22	100	0	0	4	0	4	0	0	0	0	96		O	(99)
No. 1 Moresko	5/5–6/7/01	Sp	83	6	89	93	79.4	779.6	10	100	0	0	0	0	0	0	0	0	0	98	100	O	(87)
Polarpesca I	10/6–27/6/01	Sp	23	3	26	88	152.5	187.9	81	100	0	0	0	0	0	0	0	0	0	100	100	O	(88)
RK-1	4/5–19/6/01	Auto	173	34	207	84	220.5	739.2	29	82	0	0	0	0	0	0	0	0	0	2	68	O	(11)
*RK-1**	24/6–30/8/01	Auto			304		236.6	1 070.4	22		0	0	0	0	0	0	0	0	0			O	(0)
Rutsava	17/5–25/5/01	Sp	10	0	10	100	49.7	119.5	41	100	0	0	0	0	0	0	0	0	0	100		O	(80)
Ural	6/5–7/8/01	SP	125	2	127	98	114.8	842.7	13	100	0	0	0	0	0	0	0	0	0	99	100	O	(96)
Viking Bay	1/5–30/8/01	Sp	150	9	159	94	226.3	1 066.7	21	100	0	0	1	0	1	0	0	0	0	96	89	O	(0)
Total						95	2 926.6	14 561.6	24								0.002	0	0.002				
Subareas 58.6 and 58.7																							
Aquatic Pioneer	25/9–12/11/00	Sp	52	0	52	100	165.2	629.8	26	89	13	0	2	0	15	0	0.079	0	0.079	100		O	(96)
Eldfisk	7/9–6/11/00	Auto	129	127	256	50	290.2	778.1	37	89	0	2	2	0	2	2	0	0.009	0.004	99	100	O	(95)
Eldfisk	11/5–4/7/01	Auto	163	92	255	64	447.3	880.2	58	89	1	0	0	0	1	0	0.005	0	0.003	100	100	O	(98)
Eldfisk	9/8–11/9/01	Auto	63	4	67	94	143.8	234.2	61	81	1	0	0	0	1	0	0.007	0	0.007	100	100	O	(100)
Eldfisk	4/12–10/12/00	Auto	4	28	32	13	34.2	104.0	32	85	1	1	0	2	1	3	0.250	0.033	0.058	100	100	O	(0)
Isla Graciosa	7/10–11/12/00	Sp	80	0	80	100	625.5	1 062.2	58	100	1	0	5	0	6	0	0.002	0	0.002	100		O	(100)
Isla Graciosa	22/4–25/5/01	Sp	39	0	39	100	43.6	627.7	6	100	0	0	0	0	0	0	0	0	0	100		O	(0)
Isla Graciosa	15/6–30/7/01	Sp	41	3	44	93	39.5	492.2	8	100	0	0	4	0	4	0	0	0	0	100	100	O	(98)
Koryo Maru 11	5/2–2/4/01	Sp	97	1	98	99	559.0	878.9	63	100	8	0	36	0	44	0	0.014	0	0.014	100	100	O	(100)
Koryo Maru 11	20/10–29/11/00	Sp	20	18	38	53	89.6	593.3	15	100	6	13	4	1	10	14	0.144	0.270	0.212	100	100	O	(100)
Suidor One	30/7–7/9/01	Sp	30	1	31	97	169.4	280.1	60	100	0	0	6	0	6	0	0	0	0	100	100	O	(100)
Total						78	2 607.3	6 560.7	39								0.014	0.037	0.018				
Subarea 88.1+																							
Eldfisk	20/2–17/3/01	Auto	25	44	69	36	90.5	234.0	37	79	0	0	0	0	0	0	0	0	0	100	100		(0)
Isla Alegranza	6/3–18/3/01	Sp																					
Isla Gorriti	29/1–3/3/01	Auto	2	36	38	5	251.4	280.8	89	86	0	0	0	0	0	0	0	0	0	100	100		(0)
Isla Graciosa	12/3–18/3/01	Sp	3	9	12	25	32.5	45.0	72	100	0	0	0	0	0	0	0	0	0	100	100		(0)
Janas	14/1–26/3/01	Auto	13	199	212	6	454.8	1 069.0	42	89	0	0	0	0	0	0	0	0	0	100	100		(0)
San Aotea II	14/1–17/5/01	Auto	85	180	265	32	595.7	1 317.7	45	88	0	0	0	1	0	1	0	0	0	100	100		(0)
Sonrisa	22/1–28/2/01	Auto	3	71	74	4	136.2	275.5	49	75	0	0	0	0	0	0	0	0	0	100	100		(0)
Total						18	1 561.1	3 222	56								0	0	0				

Table 52: Estimated total seabird mortality by vessel for Subarea 48.3 during the 2000/01 season.

Vessel	Hooks Observed (thousands)	Hooks Set (thousands)	% Hooks Observed	% Night Sets	Estimated Number of Birds Caught Dead		
					Night	Day	Total
Argos Georgia	229.5	1 083.3	21	99	0	0	0
Argos Helena	299.3	1 343.6	22	100	13	0	13
Ibsa Quinto	190.2	1 161.1	16	100	13	0	13
In Sung 66	148.1	795.9	18	96	0	0	0
In Sung 66	111.4	729.2	15	95	0	0	0
Isla Alegranza	380.1	1 550.9	24	90	4	0	4
Isla Camila	53.1	205.1	25	95	0	0	0
Isla Camila	67.5	359.8	18	96	0	0	0
Isla Santa Clara	43.2	259.8	16	95	0	0	0
Isla Santa Clara	131.7	855.0	15	92	0	0	0
Koryo Maru 11	265.9	1 769.6	15	96	0	0	0
Maria Tamara	21.0	66.6	31	100	0	0	0
No. 1 Moresko	142.4	646.1	22	100	0	0	0
No. 1 Moresko	79.4	779.6	10	93	0	0	0
Polarpesca I	152.5	187.9	81	88	0	0	0
RK-1	220.5	739.2	29	84	0	0	0
RK-1	236.6	1 070.4	22		0	0	0
Rutsava	49.7	119.5	41	100	0	0	0
Ural	114.8	842.7	13	98	0	0	0
Viking Bay	226.3	1 066.7	21	94	0	0	0
Total	2 926.6	14 561.6	24	90	30	0	30

Table 53: Species composition of birds killed in longline fisheries in Subareas 48.3, 58.6 and 58.7 during the 2000/01 season. N – night setting; D – daylight setting (including nautical dawn and dusk); DIM – black-browed albatross; MAI – southern giant petrel; PRO – white-chinned petrel; DAC – cape petrel; PCI – grey petrel; () – % composition.

Vessel	Dates of Fishing	No. Birds Killed by Group						Species Composition (%)				
		Albatross		Petrels		Total						
		N	D	N	D	N	D	DIM	MAI	PRO	DAC	PCI
Subarea 48.3												
Argos Georgia	7/6–25/7/01	0	0	0	0	0	0					
Argos Helena	4/5–21/8/01	0	0	3	0	3	0		3 (100)			
Ibsa Quinto	3/5–11/7/01	2	0	0	0	2	0	2 (100)				
In Sung 66	1/5–6/7/01	0	0	0	0	0	0					
In Sung 66	8/7–11/9/01	0	0	0	0	0	0					
Isla Alegranza	1/5–30/8/01	0	0	1	0	1	0				1 (100)	
Isla Camila	12/6–20/7/01	0	0	0	0	0	0					
Isla Camila	1/5–28/5/01	0	0	0	0	0	0					
Isla Santa Clara	30/6–17/7/01	0	0	0	0	0	0					
Isla Santa Clara	1/5–30/6/01	0	0	0	0	0	0					
Koryo Maru 11	21/5–31/8/01	0	0	0	0	0	0					
Maria Tamara	14/7–20/7/01	0	0	0	0	0	0					
No. 1 Moresko	17/7–30/8/01	0	0	0	0	0	0					
No. 1 Moresko	5/5–6/7/01	0	0	0	0	0	0					
Polarpesca 1	10/6–27/6/01	0	0	0	0	0	0					
RK-1	4/5–19/6/01	0	0	0	0	0	0					
RK-1	24/6–30/8/01	0	0	0	0	0	0					
Rutsava	17/5–25/5/01	0	0	0	0	0	0					
Ural	6/5–7/8/01	0	0	0	0	0	0					
Viking Bay	1/5–30/8/01	0	0	0	0	0	0					
Total %		2	0	4	0	6	0	2 (33)	3 (50)		1 (17)	
Subareas 58.6 and 58.7												
Aquatic Pioneer	25/9–12/11/00	0	0	0	13	0	13			13 (100)		
Eldfisk	7/9–6/11/00	1	0	0	1	1	1	1 (50)		1 (50)		
Eldfisk	11/5–4/7/01	0	0	1	0	1	0					1 (100)
Eldfisk	9/8–11/9/01	0	0	1	0	1	0					1 (100)
Eldfisk	4/12–10/12/00	0	0	1	1	1	1			2 (100)		
Isla Graciosa	7/10–11/12/00	1	0	0	0	1	0	1 (100)				
Isla Graciosa	22/4–25/5/01	0	0	0	0	0	0					
Isla Graciosa	15/6–30/7/01	0	0	0	0	0	0					
Koryo Maru 11	20/10–29/11/00	0	0	6	13	6	13			19 (100)		
Koryo Maru 11	5/2–2/4/01	0	0	8	0	8	0			8 (100)		
Suidor One	30/7–7/9/01	0	0	0	0	0	0					
Total %		2	0	17	28	19	28	2 (4)		43 (92)		2 (4)

Table 54: Estimated total seabird mortality by vessel for Subareas 58.6 and 58.7 during the 2000/01 season.

Vessel	Hooks Observed (thousands)	Hooks Set (thousands)	% Hooks Observed	% Night Sets	Estimated Number of Birds Caught Dead		
					Night	Day	Total
Aquatic Pioneer	165.2	629.8	26	100	50	0	50
Eldfisk	290.2	778.1	37	50	0	4	4
Eldfisk	447.3	880.2	58	64	3	0	3
Eldfisk	143.8	234.2	61	94	2	0	2
Eldfisk	34.2	104.0	32	13	3	3	6
Isla Graciosa	625.5	1 062.2	58	100	2	0	2
Isla Graciosa	43.6	627.7	6	100	0	0	0
Isla Graciosa	39.5	492.2	8	93	0	0	0
Koryo Maru 11	559.0	878.9	63	99	12	0	12
Koryo Maru 11	89.6	593.3	15	53	45	75	120
Suidor One	169.4	280.1	60	97	0	0	0
Total	2 607.3	6 560.7	39	78	117	82	199

Table 55: 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 2001.

Subarea	Year				
	1997	1998	1999	2000	2001
48.3					
Estimated by-catch	5 755	640	210*	21	30
By-catch rate	0.23	0.032	0.013*	0.002	0.002
58.6, 58.7					
Estimated by-catch	834	528	156	516	199
By-catch rate	0.52	0.194	0.034	0.046	0.018

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

Table 56: Summary of compliance with Conservation Measure 29/XV (1996/97), Conservation Measure 29/XVI (1997/98 to 1999/2000) and Conservation Measure 29/XIX (2000/01), based on data from scientific observers, for the 1996/97, 1997/98, 1998/99, 1999/2000 and 2000/01 seasons. 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		Length		No. Streamers		Distance Apart		Night	Day
Subarea 48.3																		
1996/97	0	(91)	5	45	81	0 (91)	6	(94)	47	(83)	24	(94)	76	(94)	100	(78)	0.18	0.93
1997/98	0	(100)	6	42.5	90	31 (100)	13	(100)	64	(93)	33	(100)	100	(93)	100	(93)	0.03	0.04
1998/99	5	(100)	6	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	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
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
Subareas 58.6 and 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
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	100	(100)	100	(100)	100	(100)	100	(100)	100	(100)	0	0
2000/01	1	(100)	12	40	18[5]	No Discharge	100	(100)	100	(100)	100	(100)	100	(100)	100	(100)	0	0

[1] Includes daylight setting – and associated seabird by-catch – as part of line-weighting experiments on *Argos Helena* (WG-FSA-99/5).
[2] Includes some daylight 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 daylight setting south of 65°S in Subarea 88.1 to conduct a line-weighting experiment.
[4] Conservation Measure 190/XVIII allowed New Zealand vessels to undertake daylight setting south of 65°S in Subarea 88.1 to conduct a line-weighting experiment.
[5] Conservation Measure 210/XIX allows vessels to undertake daylight setting south of 65°S in Subarea 88.1, if they can demonstrate a sink rate of 0.3 m/s.

Table 57: Compliance, as reported by scientific observers, of streamer lines with the minimum specifications set out in Conservation Measure 29/XIX during the 2000/01 season. Y – yes, N – no, - – no information; A – autoliner, Sp – Spanish; CHL – Chile, ESP – Spain, GBR – United Kingdom, KOR – Republic of Korea, NZL – New Zealand, RUS – Russia, UKR – Ukraine, URY – Uruguay, ZAF – South Africa.

Vessel Name (Nationality)	Dates of Trip	Fishing Method	Compliance with CCAMLR Specifications	Compliance with Details of Streamer Line Specifications					Spare Streamers on Board
				Attachment, Height above Water (m)	Total Length (m)	No. Streamers per Line	Spacing of Streamers per Line (m)	Length of Streamers (m)	
Subarea 48.3									
Argos Georgia (GBR)	23/4–2/8/01	Sp	Y	Y (6)	Y (150)	Y (7)	Y (5)	Y (3.5-1)	Y
Argos Helena (GBR)	3/5–29/8/01	Sp	N	Y (4.5)	N (85)	Y (14)	Y (5)	N (1-1.5)	Y
Ibsa Quinto (ESP)	25/4–16/7/01	Sp	Y	Y (7)	Y (160)	Y (5)	Y (7)	-	-
In Sung 66 (KOR)	26/4–7/7/01	Sp	Y	Y (4.5)	Y (165)	Y (10)	Y (5)	-	Y
In Sung 66 (KOR)	7/7–6/9/01	Sp	Y	Y (6)	-	Y (5)	Y (5)	-	-
Isla Alegranza (URY)	28/4–5/9/01	Sp	Y	-	Y (160)	-	-	-	-
Isla Camila (CHL)	1/5–29/5/01	Sp	N	Y(7)	N (90)	Y (13)	Y (3)	Y (3.2-2)	Y
Isla Camila (CHL)	8/6–17/8/01	Sp	N	Y (7)	N (80)	Y (30)	Y (2.5)	-	-
Isla Santa Clara (CHL)	25/4–1/7/01	Sp	N	N (3)	Y (150)	Y (6)	Y (5)	-	-
Isla Santa Clara (CHL)	1/7–24/7/01	Sp	Y	Y (6)	Y (150)	Y (5)	Y (5)	-	-
Koryo Maru II (ZAF)	19/4–13/9/01	SP	N	N (2.5)	N (120)	Y (8)	N (2)	-	-
Maria Tamara (CHL)	30/6–31/8/01	SP	Y	Y (5)	Y (150)	Y (5)	Y (5)	Y (3.5-1)	Y
No. 1 Moresko (KOR)	1/5–12/7/01	Sp	N	Y (5.2)	N (95)	Y (5)	N (4)	-	Y
No. 1 Moresko (KOR)	13/7–6/9/01	Sp	N	Y (5.2)	N (95)	Y (5)	N (4)	-	Y
Polarpesca I (CHL)	7/6–27/8/01	Sp	N	Y (4.5)	N (125)	Y (20)	Y (3)	-	-
RK-1 (UKR)	21/4–23/6/01	A	Y	Y (15)	Y (150)	Y (25)	Y (4)	-	-
RK-1 (UKR)	23/6–5/9/01	Auto	Y	-	Y (150)	Y (7)	-		-
Rutsava (RUS)	25/4–12/6/01	Sp	N	Y (5)	N (100)	N (4)	Y (5)	-	-
Ural (RUS)	22/4–22/8/01	Sp	Y	-	Y (150)	Y (5)	Y (5)	Y (3.5-1)	Y
Viking Bay (ESP)	13/5–31/8/01	Sp	Y	Y (5)	Y (150)	Y (50)	Y (2)	-	-
Subareas 58.6 and 58.7									
Aquatic Pioneer (ZAF)	20/9–20/11/00	Sp	N	Y (7.5)	N (117)	Y (6)	Y (5)	Y (3-2)	-
Eldfisk (ZAF)	2/9–12/11/00	A	Y	Y (6)	Y (151.5)	Y (7)	Y (5)	Y (3.5)	Y
Eldfisk (ZAF)	29/11–3/1/01	A	N	Y (6)	N (100)	Y (5)	Y (5)	Y (2-6)	Y
Eldfisk (ZAF)	5/5–11/7/01	A	Y	Y (5)	Y (150)	Y (6)	Y (2.5)	Y (5-1)	-
Eldfisk (ZAF)	4/8–6/9/01	A	Y	Y (6)	Y (155)	Y (12)	Y (2)	Y (3-1.5)	Y
Isla Graciosa (ZAF)	2/10–17/12/00	Sp	Y	Y (5)	Y (150)	Y (5)	Y (5)	-	Y
Isla Graciosa (ZAF)	28/3–1/6/01	Sp	Y	Y (7.5)	Y (160)	Y (12)	Y (1.25)	Y (4-1)	-
Isla Graciosa (ZAF)	11/6–7/8/01	Sp	Y	Y (5)	Y (155)	Y (8)	Y (3.5)	-	-
Koryo Maru 11 (ZAF)	16/10–6/12/00	Sp	N	Y (8)	N (115)	Y (8)	Y (5)	-	Y
Koryo Maru 11 (ZAF)	24/1–9/4/01	Sp	Y	Y (8)	Y (155)	Y (8)	Y (5)	-	Y
Sudior One (ZAF)	24/7–17/9/01	Sp	N	Y (4.5)	N (125)	Y (5)	Y (5)	Y (3.5-1)	Y
Subarea 88.1									
Eldfisk (ZAF)	20/2–17/3/01	A	Y	Y (5)	Y (150)	Y (9)	Y (5)	Y (3.5-1)	-
Isla Gorriti (URY)	14/1–19/3/01	A	Y	Y (4.5)	Y (150)	Y (5)	Y (5)	-	Y
Isla Graciosa (ZAF)	25/2–27/3/01	Sp	Y	Y (5)	Y (199)	Y (7)	Y (2.5)	-	Y
Janas (NZL)	1/1–3/4/01	A	Y	Y (8)	Y (200)	Y(16)	Y (4)	Y (5-1.5)	-
San Aotea II (NZL)	2/1–23/5/01	A	Y	Y (6)	Y (150)	Y (25)	Y (5)	-	Y
Sonrisa (NZL)	6/1–1/3/01	A	Y	Y (11)	Y (150)	Y (5)	Y (5)	Y (4.5-2)	-

Table 58: Summary of compliance with Conservation Measure 29/XVI (1998 to 2000) and Conservation Measure 29/XIX (2000/01) regarding night setting, correct configuration and use of streamer lines and offal discharge practices in the Convention Area, from 1998 to 2001. Vessels with a history of non-compliance (at least two elements of the conservation measure in two consecutive years, including the current year) with a conservation measure are indicated in bold. Vessels in their first year in the fishery that failed to comply with two elements of the conservation measures are indicated in italics in the column for the current year (2001). Nationality: CHL – Chile, ESP – Spain, GBR – United Kingdom, KOR – Republic of Korea, NZL – New Zealand, RUS – Russia, UKR – Ukraine, URY – Uruguay, ZAF – South Africa, Y – complied, N – did not comply, - – did not fish, na – not applicable.

Vessel	Subarea/	Night Setting				Streamer Line				Offal Discharge				Line Weighting			
(Nationality)	Division	1998	1999	2000	2001	1998	1999	2000	2001	1998	1999	2000	2001	1998	1999	2000	2001
***Aquatic Pioneer* (ZAF)**	**58.6, 58.7**	**Y**	**N**	**Y**	**Y**	**N**	**N**	**N**	**N**	**Y**	**Y**	**Y**	**Y**	**N**	**N**	**N**	**N**
Argos Georgia (GBR)	48.3	-	-	Y	N	-	-	N	Y	-	-	Y	Y	-	-	N	Y
***Argos Helena* (GBR)**	**48.3**	**Y**	**Y**	**Y**	**Y**	**Y**	**N**	**N**	**N**	**Y**	**Y**	**Y**	**Y**	**N**	**N**	**N**	**N**
***Eldfisk* (ZAF)** #	**58.6, 58.7**	**-**	**N**	**N**	**N**	**-**	**N**	**N**	**N**	**-**	**Y**	**Y**	**Y**	**N**	**N**	**na**	**na**
Ibsa Quinto (ESP)	48.3	-	Y	Y	Y	-	Y	N	Y	-	Y	Y	Y	-	N	N	N
In Sung 66 (KOR)	48.3	-	-	-	*N*	-	-	-	*Y*	-	-	-	*Y*	-	-	-	*N*
***Isla Alegranza* (URY)**	**48.3**	**-**	**-**	**N**	**N**	**-**	**-**	**N**	**Y**	**-**	**-**	**N**	**Y**	**-**	**-**	**N**	**N**
***Isla Camila* (CHL)**	**48.3**	**Y**	**N**	**N**	**N**	**N**	**N**	**Y**	**N**	**N**	**N**	**N**	**Y**	**N**	**N**	**N**	**N**
Isla Gorriti (URY)	48.3/88.1	-	N/-	N/-	-/na	-	N/-	N/-	-/Y	-	Y/-	Y/-	-/Y	-	na	na	-/Y
Isla Graciosa (ZAF)	58.6, 58.7/88.1	-/-	-/-	-/-	N/na	-/-	-/-	-/-	Y	-/-	-/-	-/-	Y	-/-	-/-	-/-	-/Y
***Isla Santa Clara* (CHL)**	**48.3**	**-**	**-**	**N**	**N**	**-**	**-**	**N**	**N**	**-**	**-**	**Y**	**Y**	**-**	**-**	**N**	**N**
Janas (NZL)	88.1	-	na	na	na	-	Y	Y	Y	-	Y	Y	Y	-	na	na	Y
***Koryo Maru II* (ZAF)**	**58.6, 58.7/48.3**	**Y/-**	**Y/Y**	**N/Y**	**N/N**	**N/-**	**N/Y**	**N/Y**	**N/N**	**Y/Y**	**Y/Y**	**Y/Y**	**Y/Y**	**N/N**	**N/Y**	**N/Y**	**N/N**
Maria Tamara (CHL)	48.3	-	-	-	*Y*	-	-	-	*Y*	-	-	-	*N*	-	-	-	*N*
***No. 1 Moresko* (KOR)**	**48.3**	**-**	**N**	**N**	**N**	**-**	**N**	**N**	**N**	**-**	**Y**	**Y**	**Y**	**-**	**N**	**N**	**N**
Polarpesca 1 (CHL)	48.3	-	-	-	*N*	-	-	-	*N*	-	-	-	*Y*	-	-	-	*N*
RK-1 (UKR)	48.3	-	-	Y	N	-	-	Y	Y	-	-	Y	Y	-	-	na	na
Rutsava (RUS)	48.3	-	-	-	*Y*	-	-	-	*N*	-	-	-	*Y*	-	-	-	*N*
San Aotea II (NZL)	88.1	-	na	na	na	-	Y	Y	Y	-	Y	Y	Y	-	na	na	Y
Sonrisa (NZL)	88.1	-	-	na	na	-	-	Y	Y	-	-	Y	Y	-	-	na	Y
Suidor One (ZAF)	58.6, 58.7	-	-	-	*N*	-	-	-	*N*	-	-	-	*Y*	-	-	-	*N*
Ural (RUS)	48.3	-	-	-	N	-	-	-	Y	-	-	-	Y	-	-	-	Y
Viking Bay (ESP)	48.3	-	-	-	N	-	-	-	Y	-	-	-	Y	-	-	-	Y

Eldfisk set all lines during the day using an underwater setting funnel in Subareas 58.6 and 58.7, in accordance with South African fishing permit conditions.

Table 59: Vessel compliance (%) with Conservation Measure 29/XIX during the 2000/01 season. Values for night setting and streamer line setting are absolute proportions for all sets by each vessel. Values for offal discharge, line weighting and streamer line design are averages across all cruises by each vessel.

Vessel	Number of Cruises	Night Setting	Offal Discharge	Line Weighting	Streamer Line Setting	Streamer Line Design
Subarea 48.3						
Argos Georgia (GBR)	1	99	100	100	92	100
Argos Helena (GBR)	1	100	100	0	99	0
Ibsa Quinto (ESP)	1	100	100	0	100	100
In Sung 66 (KOR)	2	96	100	0	96	100
Isla Alegranza (URY)	1	90	100	0	24	100
Isla Camila (CHL)	2	96	100	0	91	0
Isla Santa Clara (CHL)	2	94	100	0	96	50
Koryo Maru 11 (ZAF)	1	96	100	0	93	0
Maria Tamara (CHL)	1	100	0	0	100	100
No. 1 Moresko (KOR)	2	97	100	50	95	0
Polarpesca I (CHL)	1	88	100	0	100	0
RK-1 (UKR)	2	84	100	Autoline	13	100
Rutsava (RUS)	1	100	100	0	100	0
Ural (RUS)	1	98	100	100	99	100
Viking Bay (ESP)	1	94	100	100	96	100
Subareas 58.6 and 58.7						
Aquatic Pioneer (ZAF)	1	100	100	0	100	0
Eldfisk (ZAF)#	4	69	100	Autoline	100	75
Isla Graciosa (ZAF)	3	98	100	34	100	100
Koryo Maru 11 (ZAF)	2	76	100	50	100	50
Suidor One (ZAF)	1	97	100	0	100	0
Subarea 88.1						
Eldfisk (ZAF)*	1	36	100	Autoline	100	100
Isla Alegranza (URY)*	1	No data	No data	No data	No data	No data
Isla Gorriti (URY)*	1	5	100	Autoline	100	100
Isla Graciosa (ZAF)*	1	25	100	100	92	100
Janas (NZL)*	1	6	100	Autoline	100	100
San Aotea II (NZL)*	1	32	100	Autoline	100	100
Sonrisa (NZL)*	1	74	100	Autoline	100	100

* Conservation Measure 210/XIX allows fishing in Subarea 88.1 during daylight periods if the vessel can demonstrate a minimum sink rate of 0.3 metres per second.

\# *Eldfisk* set all lines during the day using an underwater setting funnel in Subareas 58.6 and 58.7, in accordance with South African fishing permit conditions.

Table 60: Estimate of seabird by-catch in the unregulated *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 2000/01. S – summer, W – winter.

Subarea/ Division	Total Unregulated Catch (tonnes)	Split S:W		Unregulated Catch (tonnes)		*Dissostichus* spp. Regulated Catch Rate (kg/hooks)	Unregulated Effort (1 000 hooks)		Seabird By-catch Rate (birds/1 000 hooks)				Estimated Total Unregulated Seabird By-catch			
									Mean		Max		Mean		Max	
		S	W	S	W		S	W	S	W	S	W	S	W	S	W
48.3	300	80	20	240	60	0.301	797	199	2.608	0.07	9.31	0.51	2 079	14	7 423	102
	300	70	30	210	90	0.301	698	299	2.608	0.07	9.31	0.51	1 820	21	6 495	152
	300	60	40	180	120	0.301	598	399	2.608	0.07	9.31	0.51	1 560	28	5 567	203
58.4.4	1 540	80	20	1 232	308	0.063	19 556	4 889	0.629	0.01	1.128	0.042	12 300	49	22 059	205
	1 540	70	30	1 078	462	0.063	17 111	7 333	0.629	0.01	1.128	0.042	10 763	73	19 301	308
	1 540	60	40	924	616	0.063	14 667	9 778	0.629	0.01	1.128	0.042	9 225	98	16 544	411
58.5.1	3 300	80	20	2 640	660	0.236	11 186	2 797	1.049	0.017	1.88	0.07	11 735	48	21 031	196
	3 300	70	30	2 310	990	0.236	9 788	4 195	1.049	0.017	1.88	0.07	10 268	71	18 402	294
	3 300	60	40	1 980	1 320	0.236	8 390	5 593	1.049	0.017	1.88	0.07	8 801	95	15 773	392
58.5.2	1 649	80	20	1 319	330	0.236	5 590	1 397	1.049	0.017	1.88	0.07	5 864	24	10 509	98
	1 649	70	30	1 154	495	0.236	4 891	2 096	1.049	0.017	1.88	0.07	5 131	36	9 195	147
	1 649	60	40	989	660	0.236	4 192	2 795	1.049	0.017	1.88	0.07	4 398	48	7 882	196
58.6	660	80	20	528	132	0.04	13 200	3 300	1.049	0.017	1.88	0.07	13 847	56	24 816	231
	660	70	30	462	198	0.04	11 550	4 950	1.049	0.017	1.88	0.07	12 116	84	21 714	347
	660	60	40	396	264	0.04	9 900	6 600	1.049	0.017	1.88	0.07	10 385	112	18 612	462
58.7	150	80	20	120	30	0.064	1 875	469	1.049	0.017	1.88	0.07	1 967	8	3 525	33
	150	70	30	105	45	0.064	1 641	703	1.049	0.017	1.88	0.07	1 721	12	3 084	49
	150	60	40	90	60	0.064	1 406	938	1.049	0.017	1.88	0.07	1 475	16	2 644	66

Note: No data are available for longline fishing in Divisions 58.4.4, 58.5.1 and 58.5.2 in 2000/01. The figures used for CPUE (kg/hook) are derived from fine-scale catch and effort data (C2), and are revised figures for 1999/2000.

Table 61: Estimates of potential seabird by-catch in unregulated longline fishing in the Convention Area in 2000/01.

Subarea/ Division	Potential By-catch Level	Summer	Winter	Total[1]
48.3	Lower (mean)	1 600–2 100	10–30	1 600–2 100
	Higher (max)	5 600–7 400	100–200	5 800–7 500
58.4.4	Lower	9 200–12 300	50–100	9 300–12 400
	Higher	16 500–22 100	210–410	16 900–22 300
58.5.1	Lower	8 800–11 700	50–100	8 900–11 800
	Higher	15 800–21 000	200–390	16 200–21 200
58.5.2	Lower	4 400–5 900	20–50	4 500–5 900
	Higher	7 900–10 500	100–200	8 100–10 600
58.6	Lower	10 400–13 800	60–110	10 500–13 900
	Higher	18 600–24 800	230–460	19 100–25 000
58.7	Lower	1 500–2 000	10–20	1 500–2 000
	Higher	2 600–3 500	30–70	2 700–3 500
Total	Lower	35 900–67 000[1]	200–900[1]	36 000–69 000[2]
	Higher	47 800–89 300[1]	400–1 700[1]	48 000–90 000[2]

[1] Rounded to nearest hundred birds
[2] Rounded to nearest thousand birds

Table 62: Composition of estimated potential by-catch in unregulated longline fisheries in the Convention Area from 1997 to 2001.

Area/Year		Estimated Total Potential Seabird By-catch[1] (lower level above, higher level below)	Composition of Potential Seabird By-catch[2]		
			Albatrosses	Giant Petrels	White-chinned Petrels
Subarea 48.3[3]					
	1996/97	-	-	-	-
	1997/98	-	-	-	-
	1998/99	3 000–4 000	1 505	70	1 680
		12 000–16 000	6 020	280	6 720
	1999/00	1 900–2 600	967	45	1 080
		7 200–9 300	3 547	165	3 960
	2000/01	1 600–2 100	795	37	888
		5 800–7 500	2 860	133	3 192
Divisions 58.5.1, 58.5.2[4]					
	1996/97	-	-	-	-
	1997/98	34 000–45 000	8 690	1 580	24 885
		61 000–81 000	15 620	2 840	44 730
	1998/99	2 000–3 000	550	100	1 575
		4 000–5 000	990	180	2 835
	1999/00	7 800–10 300	1 991	362	5 701
		14 100–18 600	3 597	654	10 300
	2000/01	13 400–17 700	3 421	622	9 796
		24 300–31 800	6 171	1 122	17 671
Division 58.4.4[4]					
	1996/97	-			
	1997/98	-			
	1998/99	3 000–5 000	880	160	2 520
		4 000–7 000	1 210	220	3 465
	1999/00	6 400–8 400	1 628	296	4 662
		11 600–15 100	2 937	534	8 410
	2000/01	9 300–12 400	2 387	434	6 835
		16 900–22 300	4 312	784	12 348
Subareas 58.6, 58.7[4]					
	1996/97	17 000–27 000	4 840	880	13 860
		66 000–107 000	19 030	3 460	54 495
	1997/98	9 000–11 000	2 200	400	6 300
		15 000–20 000	3 850	700	11 025
		24 000–32 000	6 160	1 120	17 640
	1998/99	13 000–17 000	3 300	600	9 450
	1999/00	16 700–22 000	4 257	774	12 190
		30 200–39 600	7 678	1 396	21 987
	2000/01	12 000–15 900	3 069	558	8 788
		21 800–28 500	5 533	1 006	15 844
Total	1996/97	17 000–27 000	4 840	880	13 860
		66 000–107 000	19 030	3 460	54 495
	1997/98	43 000–54 000	10 890	1 980	30 185
		76 000–101 000	19 470	3 540	55 755
	1998/99	21 000–29 000	6 235	930	15 225
		44 000–59 000	14 380	1 800	30 660
	1999/00	33 000–63 000	8 843	1 477	23 633
		43 000–83 000	17 759	2 749	44 657
	2000/01	36 000–69 000	9 672	1 651	26 307
		48 000–90 000	18 876	3 045	49 055
Overall Total		147 000–237 000	40 480	6 918	109 210
		276 000–438 000	89 515	14 594	234 622

[1] Rounded to nearest thousand birds
[2] Based on averages for lower (above) and higher (below) level values
[3] Based on 43% albatrosses, 2% giant petrels, 48% white-chinned petrels (7% unidentified petrels) (SC-CAMLR-XVI, Annex 5, Table 44).
[4] Based on 22% albatrosses, 4% giant petrels, 63% white-chinned petrels (10% unidentified petrels) (SC-CAMLR-XVI, Annex 5, Table 42).

Table 63: Summary of IMALF risk level and assessment in relation to proposed new and exploratory longline fisheries in 2001/02.

Area	Risk Level	IMALF Risk Assessment (see SC-CAMLR-XX/BG/11)	Notes
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. Apply Conservation Measure 29/XIX as a seabird by-catch precautionary measure.	• Japan (CCAMLR-XX/10) proposes to fish on 'dates as established by CCAMLR'. **Intent to comply with Conservation Measure 29/XIX not specified. Observer coverage to be provided by Japanese monitoring observer, contrary to existing practice and Conservation Measure 200/XIX.** • New Zealand (CCAMLR-XX/12) proposes to fish from 1 December 2001 to 30 November 2002, both south and north of 55°S. Intends to comply fully with Conservation Measure 29/XIX. Proposal does not conflict with advice provided. • South Africa (CCAMLR-XX/15) proposes to fish during a season to be established at CCAMLR-XX. States intent to comply with Conservation Measure 29/XIX, and to conduct line-weighting experiments, as approved by the Scientific Committee e.g. as per Conservation Measure 210/XIX (Annex). Proposal does not conflict with advice provided. • Uruguay (CCAMLR-XX/16) proposes to fish from 1 March to 31 August 2002 and to comply with Conservation Measure 29/XIX. Proposal does not conflict with advice provided.
58.4.1	3	Average risk. Apply all elements of Conservation Measure 29/XIX. Much of the risk to seabirds in this area arises in the region of the BANZARE Rise in the west of the region, adjacent to Division 58.4.3.	• Japan (CCAMLR-XX/10) proposes to fish on 'dates as established by CCAMLR'. **Intent to comply with Conservation Measure 29/XIX not specified. Observer coverage to be provided by Japanese monitoring observer, contrary to existing practice and Conservation Measure 200/XIX.**
58.4.3	3	Average risk. Prohibit longline fishing during the breeding season of albatrosses, giant petrels and white-chinned petrels (September to April). Maintain all elements of Conservation Measure 29/XIX.	• France (CCAMLR-XX/9) proposes to fish from 1 May to 31 August 2002 and to comply with Conservation Measure 29/XVI, **not Conservation Measure 29/XIX**. • Japan (CCAMLR-XX/10) proposes to fish on 'dates as established by CCAMLR'. **Intent to comply with Conservation Measure 29/XIX not specified. Observer coverage to be provided by Japanese monitoring observer, contrary to existing practice and Conservation Measure 200/XIX.**

(continued)

Table 63 (continued)

Area	Risk Level	IMALF Risk Assessment (see SC-CAMLR-XX/BG/11)	Notes
58.4.4	3	Average risk. Prohibit longline fishing during the main breeding season of albatrosses and petrels (September to April). Maintain all elements of Conservation Measure 29/XIX.	• France (CCAMLR-XX/9) proposes to fish from 1 May to 31 August 2002 and to comply with Conservation Measure 29/XVI, **not Conservation Measure 29/XIX** • Japan (CCAMLR-XX/10) proposes to fish on 'dates as established by CCAMLR'. **Intent to comply with Conservation Measure 29/XIX not specified. Observer coverage to be provided by Japanese monitoring observer, contrary to existing practice and Conservation Measure 200/XIX.** • New Zealand (CCAMLR-XX/12) **proposes to fish from 1 December 2001 to 30 November 2002, both south and north of 55°S**. States intent to comply with Conservation Measure 29/XIX. • South Africa (CCAMLR-XX/15) proposes to fish during a season to be established at CCAMLR-XX. States intent to comply with Conservation Measure 29/XIX, and to conduct line-weighting experiments, as approved by the Scientific Committee e.g. as per Conservation Measure 210/XIX (and Annex A). Proposal does not conflict with advice provided, **assuming that fishing season is between 1 May and 31 August.** • Uruguay (CCAMLR-XX/17) proposes to fish from 1 May to 31 August 2002 and to comply with Conservation Measure 29/XIX. 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 29/XIX.	• Chile (CCAMLR-XX/8) proposes to fish from 1 May to 31 August 2002 and comply with Conservation Measure 29/XIX. Proposal does not conflict with advice provided. • France (CCAMLR-XX/9) proposes to fish from 1 May to 31 August 2002 and to comply with Conservation Measure 29/XVI, **not Conservation Measure 29/XIX.** • Japan (CCAMLR-XX/10) proposes to fish on 'dates as established by CCAMLR'. **Intent to comply with Conservation Measure 29/XIX not specified. Observer coverage to be provided by Japanese monitoring observer, contrary to the Convention and Conservation Measure 200/XIX.** • South Africa (CCAMLR-XX/15) proposes to fish during a season to be established at CCAMLR-XX. States intent to comply with Conservation Measure 29/XIX, and to conduct line-weighting experiments, as approved by the Scientific Committee e.g. as per Conservation Measure 210/XIX (and Annex A). Proposal does not conflict with advice provided, **assuming that fishing season is between 1 May and 31 August.**

(continued)

Table 63 (continued)

Area	Risk Level	IMALF Risk Assessment (see SC-CAMLR-XX/BG/11)	Notes
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 adherence to the provisions of Conservation Measures 29/XIX and 210/XX including Annex A.	• Japan (CCAMLR-XX/10) proposes to fish on 'dates as established by CCAMLR'. **Intent to comply with Conservation Measure 29/XIX or Conservation Measure 210/XIX not specified. Observer coverage to be provided by Japanese monitoring observer, contrary to existing practice and Conservation Measure 200/XIX.** • New Zealand (CCAMLR-XX/11) proposes to fish from 1 December 2001 to 31 August 2002. States intent to comply with Conservation Measures 29/XIX and 210/XIX. Proposal does not conflict with advice provided. • Russia (CCAMLR-XX/13) proposes to fish from 1 December 2001 to 31 August 2002. States intent to comply with Conservation Measure 29/XIX. **Compliance with Conservation Measure 210/XIX not mentioned.** • South Africa (CCAMLR-XX/15) – proposal does not conflict with advice provided. Fishing season to be as established at CCAMLR-XX. States intent to comply with Conservation Measure 29/XIX and to conduct line-weighting experiments, as approved by the Scientific Committee e.g. as per Conservation Measure 210/XIX (and Annex A).
88.2	1	Low risk. No obvious need for restriction of longline fishing season. Apply Conservation Measure 29/XIX as a seabird by-catch precautionary measure.	• Japan (CCAMLR-XX/10) proposes to fish on 'dates as established by CCAMLR'. **Intent to comply with Conservation Measure 29/XIX not specified. Observer coverage to be provided by Japanese monitoring observer, contrary to existing practice and Conservation Measure 200/XIX.** • New Zealand (CCAMLR-XX/11) proposes to fish from 1 December 2001 to 31 August 2002. States intent to comply with Conservation Measures 29/XIX and 210/XIX. Proposal does not conflict with advice provided. • Russia (CCAMLR-XX/14) proposes to fish from 1 December 2001 to 31 August 2002. States intent to comply with Conservation Measure 29/XIX. **Compliance with Conservation Measure 210/XIX not mentioned.** • South Africa (CCAMLR-XX/15) – proposal does not conflict with advice provided. Fishing season to be as established at CCAMLR-XX. States intent to comply with Conservation Measure 29/XIX and to conduct line-weighting experiments, as approved by the Scientific Committee e.g. as per Conservation Measure 210/XIX (and Annex A).

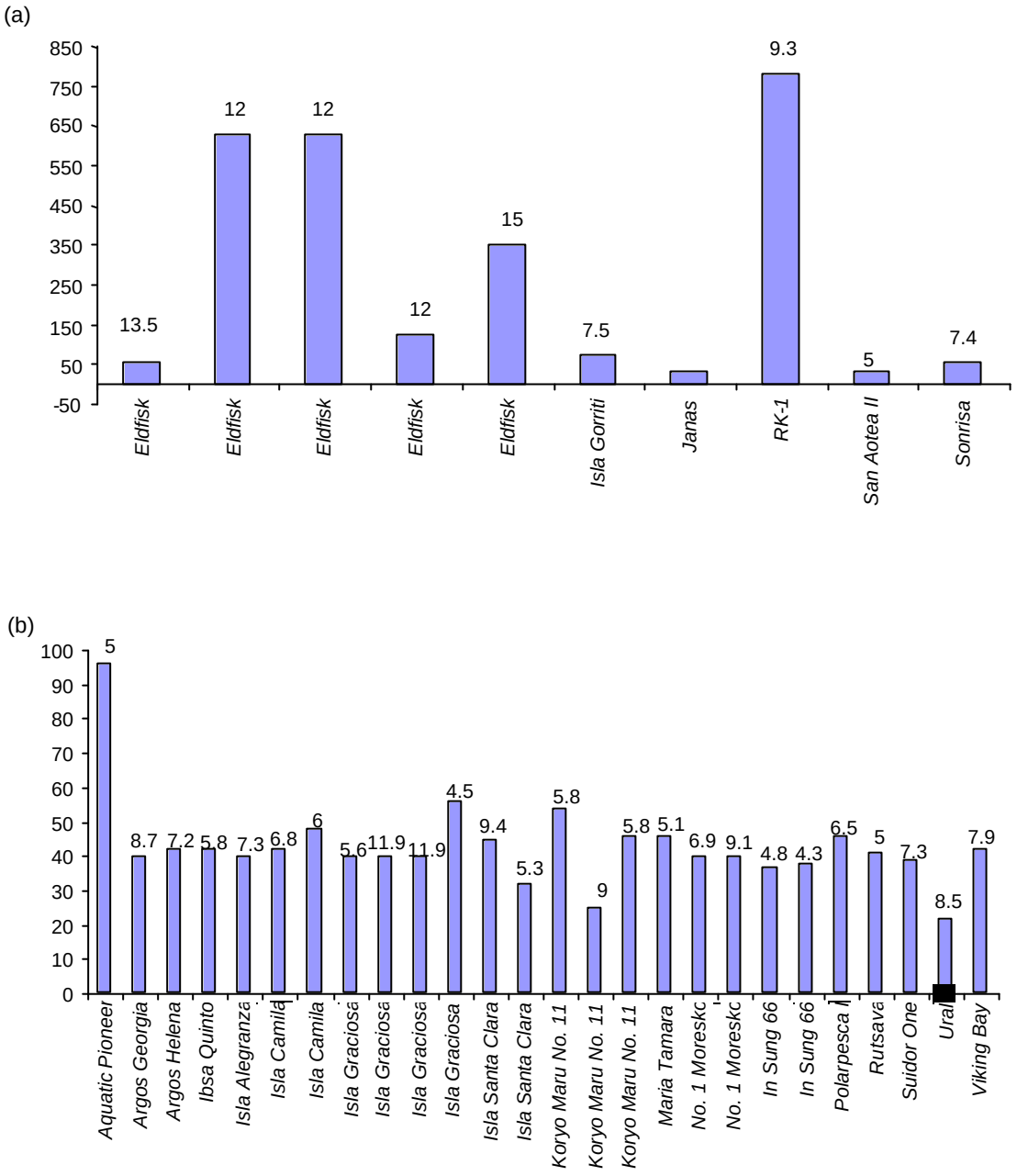

Figure 35: Longline weight spacing (y-axis in metres) and weights used (kilograms) by (a) autoline and (b) Spanish systems during the 2001 season.