

**REPORT OF THE AD HOC WORKING GROUP ON
INCIDENTAL MORTALITY ASSOCIATED WITH FISHING**

Part I

Ad Hoc WG-IMAF Advice to the Scientific Committee
(compiled by the Co-conveners of Ad Hoc WG-IMAF)

Part II

Report of Ad Hoc WG-IMAF
(Hobart, Australia, 8 to 12 October 2007)

PART I

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CONTENTS

	Page
GENERAL	411
INCIDENTAL MORTALITY OF SEABIRDS AND MARINE MAMMALS IN FISHERIES IN THE CONVENTION AREA	411
Seabirds in longline fisheries	411
French EEZs in Subarea 58.6 and Division 58.5.1	412
Seabirds in trawl fisheries	413
Seabirds in pot fisheries	414
Marine mammals in longline, trawl and pot fisheries	414
Information relating to the implementation of Conservation Measures 26-01, 25-02 and 25-03	414
INCIDENTAL MORTALITY OF SEABIRDS IN FISHERIES OUTSIDE THE CONVENTION AREA	416
INCIDENTAL MORTALITY OF SEABIRDS DURING UNREGULATED LONGLINE FISHING IN THE CONVENTION AREA	417
RESEARCH INTO AND EXPERIENCE WITH MITIGATION MEASURES	417
Longline	417
Trawl	419
OBSERVER REPORTS AND DATA COLLECTION	420
RESEARCH INTO THE STATUS AND DISTRIBUTION OF SEABIRDS	421
ASSESSMENT OF RISK IN CCAMLR SUBAREAS AND DIVISIONS	421
INCIDENTAL MORTALITY OF SEABIRDS IN RELATION TO NEW AND EXPLORATORY FISHERIES	422
INTERNATIONAL AND NATIONAL INITIATIVES RELATING TO INCIDENTAL MORTALITY OF SEABIRDS IN RELATION TO LONGLINE FISHING	423
FISHERY REPORTS	425
STREAMLINING THE WORK OF THE SCIENTIFIC COMMITTEE	425
Future focus of the work of ad hoc WG-IMAF and a workshop proposal	425
OTHER BUSINESS	426

PART I

AD HOC WG-IMAF ADVICE TO THE SCIENTIFIC COMMITTEE (Compiled by the Co-conveners of Ad Hoc WG-IMAF)

GENERAL

(see also Part II, paragraphs 1 to 5)

I.1 The plan of intersessional work for 2007/08 (Part II, Table 21) summarises requests to Members and others for information of relevance to the work of the Working Group (Part II, paragraphs 1 to 3). Members are particularly invited to review the membership of the Working Group, to suggest additional members and to facilitate attendance of their representatives at meetings, especially technical coordinators and South American Members (Part II, paragraphs 4 to 5).

INCIDENTAL MORTALITY OF SEABIRDS AND MARINE MAMMALS IN FISHERIES IN THE CONVENTION AREA

(see also Part II, paragraphs 6 to 44)

Seabirds in longline fisheries

I.2 The total number of observed seabird mortalities in longline fisheries in 2006/07, except for in the French EEZs in Subarea 58.6 and Division 58.5.1, was zero. This compared to two birds estimated killed, except for in the French EEZs in Subarea 58.6 and Division 58.5.1, in 2005/06 (Part II, Table 2). When seabird mortalities reported from the French EEZs in Subarea 58.6 and Division 58.5.1 are included, the total extrapolated seabird mortalities during longline fishing operations in 2006/07 were estimated to be 2 257. This estimate includes 313 seabirds in Subarea 58.6 and 1 944 seabirds in Division 58.5.1 (Part II, Table 5). For the second time no albatrosses were observed captured in longline fisheries in the Convention Area (Part II, Tables 2 and 3).

I.3 The total number of seabirds observed caught and released uninjured, except for in the French EEZs in Subarea 58.6 and Division 58.5.1, was seven (Part II, Table 1) down from 32 in 2005/06 (SC-CAMLR-XXV, Annex 5, paragraph 7.3). The total number of seabirds observed caught and released uninjured in the French EEZs in Subarea 58.6 and Division 58.5.1 was 212 (Part II, Table 3) down from 258 in 2005/06 (SC-CAMLR-XXV, Annex 5, Appendix D, Table 4). The Working Group noted that the incidence of birds being caught injured and uninjured (i.e. birds that are caught on the haul), except for in the French EEZs in Subarea 58.6 and Division 58.5.1, accounted for all seabird captures in 2006/07 (Part II, Table 1). As last year, and in combination with the data from the French EEZs in Subarea 58.6 and Division 58.5.1, this proportion of seabirds caught on the haul suggests that an increased focus on haul mitigation measures is required (SC-CAMLR-XXV, Annex 5, paragraph 7.3).

French EEZs in Subarea 58.6 and Division 58.5.1

I.4 In 2006/07, data were available from 18 cruises in Subarea 58.6 and 22 cruises in Division 58.5.1. The proportion of hooks observed was 25.52 and 25.26% respectively (Part II, paragraph 14). In 2006/07 the total reported seabird mortality from observers for Subarea 58.6 and Division 58.5.1 was 80 and 491 birds respectively (Part II, Table 4). The corresponding incidental mortality rates were 0.0650 and 0.0798 birds/thousand hooks. The extrapolated total seabird mortalities for Subarea 58.6 and Division 58.5.1 were 313 and 1 944 respectively (Part II, Table 5). All vessels in the French EEZs were autoliners using 50 g m⁻¹ IWLs in 2006/07. Two out of seven vessels caught 87.5% of the birds in Subarea 58.6, and in Division 58.5.1, 63% of captures were by three out of seven vessels. This may indicate that there are individual vessel effects that need to be examined to further reduce seabird captures in these areas (Part II, paragraph 14).

I.5 Similar to last year, the Working Group noted that 32% of seabirds captured were caught alive (28% in 2005/06), indicating that they were taken on the haul (Part II, Table 3). This re-emphasises a need to focus on haul mitigation measures to reduce the remaining seabird by-catch in these fisheries (Part II, paragraph 15).

I.6 The Working Group recognised that France has continued to reduce its total seabird by-catch each successive year and noted the efforts made to achieve this result in 2006/07 (a 13% decrease from the combined total estimated by-catch for Subarea 58.6 and Division 58.5.1 in the previous season). However, concern was expressed by the Working Group about the current level of seabird captures, noting that white-chinned petrels, which form a substantial proportion of the by-catch (Part II, Table 7), are globally threatened (Part II, paragraph 16).

I.7 The Working Group recommended that France strives to eliminate the incidental mortality of seabirds in accordance with CCAMLR policies and practices (SC-CAMLR-XVII, paragraph 4.71; Conservation Measure 25-02) (Part II, paragraph 17).

I.8 The Working Group acknowledged that some of the recommendations made by the Scientific Committee in 2006 regarding future research and monitoring of French seabird captures were again addressed (Part II, paragraphs 18 to 21) and noted that the following remain for 2007 (Part II, paragraphs 19 to 22). The Working Group recommended that:

- (i) consideration be given to using observers to collect additional data describing fishing activity and mitigation measures (Part II, paragraph 19);
- (ii) a detailed analysis of petrel population responses to fisheries and environmental factors be submitted for review to WG-SAM, and that WG-SAM report on the review to ad hoc WG-IMAF in 2008 (Part II, paragraph 20);
- (iii) all relevant raw by-catch data be submitted in the appropriate format, as is done for other Convention Area subareas and divisions, to allow reporting on the total seabird by-catch for the entire Convention Area (Part II, paragraph 21);
- (iv) analyses to address high capture rates on a few vessels, specifically addressing operational problems in the fishery, be conducted (Part II, paragraph 22).

I.9 To further address the only remaining significant incidental mortality of seabirds in longline fisheries in the Convention Area, the Working Group recommended that France:

- (i) consider broadening the set of mitigation measures used, particularly during the haul (Part II, paragraphs 25 to 26);
- (ii) work closely with ad hoc WG-IMAF participants to facilitate further research into the nature of seabird captures and consider experimental trials (Part II, paragraph 27);
- (iii) utilise analyses of the factors that led to seabird by-catch within its EEZs to improve the direction of management actions intended to reduce seabird by-catch (Part II, paragraph 29);
- (iv) urgently submit a strategic plan to eliminate seabird mortality which includes details of the implementation targets for recommended mitigation devices, establishment of by-catch targets reducing each year to near-zero levels in less than three years, and the implementation of additional seasonal and area closures if targets are not met (Part II, paragraph 30);
- (v) submit a detailed paper describing the full set of regulatory instruments in place to reduce seabird mortality directly or indirectly (Part II, paragraph 31).

Seabirds in trawl fisheries

I.10 The percentage of trawl effort observed in 2006/07 for the Subarea 48.3 icefish fishery and the Division 58.5.2 toothfish/icefish fishery was 89% (100% of vessels) and 93% (100% of vessels) respectively. In the krill fishery, 17% of vessels fishing in Subarea 48.1, 20% of vessels fishing in Subarea 48.2 and 50% of vessels fishing in Subarea 48.3 had observers on board at some time during their fishing trips (Part II, paragraphs 33, 36 and 38). The Working Group reiterated its 2006 recommendation that coverage of the krill fishery be increased to allow for adequate and representative sampling across all trawl fisheries for monitoring of by-catch and efficacy of mitigation measures (SC-CAMLR-XXV, Annex 5, paragraph 7.8).

I.11 The Working Group noted a substantial drop in seabird mortalities reported in the icefish fishery in Subarea 48.3 (Part II, paragraph 35). In 2007, 6 seabirds, including albatross and petrel species, were observed killed in the Subarea 48.3 icefish trawl fishery, and another 3 released alive and uninjured (Part II, Table 11). The mortalities included 3 black-browed albatrosses, 2 white-chinned petrels and 1 grey-headed albatross and were reported from five vessels. This compares to 33 bird mortalities (and 14 released alive) in 2006. The rate of mortality in this subarea in 2007 was 0.07 birds per trawl compared to 0.07, 0.14 and 0.37 in 2006, 2005 and 2004 respectively (Part II, paragraph 34 and Table 12). There were two seabird mortalities observed in the Division 58.5.2 trawl fishery (both Cape petrels) (Part II, Table 11), an increase from the zero mortality in 2006 but below the level observed in 2005 (Part II, Table 12).

I.12 The Working Group noted that no seabird mortality was recorded on the *Saga Sea* while fishing with continuous trawls in Subareas 48.1 and 48.2. Similarly, no mortalities were recorded on the vessels using traditional krill pelagic trawl methods in Subarea 48.3 (Part II, paragraph 39).

Seabirds in pot fisheries

I.13 No incidental seabird mortalities were recorded during the only cruise targeting *D. eleginoides* in Subarea 48.3 (Part II, paragraph 40).

Marine mammals in longline, trawl and pot fisheries

I.14 There were three southern elephant seal mortalities in longline fisheries (two in Subarea 48.3 and one in Division 58.5.2) in 2006/07 compared to no reports of incidental mortality in 2005/06 (Part II, paragraph 41). There were no marine mammals reported entangled and released alive in longline fisheries this year, down from two in 2005/06 (SC-CAMLR-XXV, Annex 5, paragraph 7.12).

I.15 In 2006/07 there were no marine mammals reported entangled or killed in the krill trawl fisheries (Part II, Table 13). The Working Group noted that this level of mortality is greatly reduced from 2004/05, when 95 Antarctic fur seals were observed caught during krill fishing operations in the same area (Area 48) and reduced from 2005/06, when one Antarctic fur seal was reported killed in this fishery (Part II, Table 14).

I.16 In 2006/07 there were no marine mammals reported entangled or killed in the finfish trawl fisheries, down from one leopard seal caught and killed in the Division 58.5.2 toothfish trawl fishery in 2005/06 (Part II, paragraph 43 and Tables 13 and 14).

I.17 There were again no reports of incidental mortality of marine mammals in pot fisheries (Part II, paragraph 44; WG-FSA-07/9).

Information relating to the implementation of Conservation Measures 26-01, 25-02 and 25-03

I.18 This year the level of reported performance was improved with 100% implementation for nearly all measures, with streamer line design and use, discard of offal and the discard of hooks in offal being the exceptions. With respect to Conservation Measure 25-02, this is summarised as follows:

- (i) Line weighting (Spanish system) – 100% reported compliance in all subareas and divisions (Part II, paragraph 48 and Table 16).
- (ii) Line weighting (autoline system) – all vessels fishing in Subareas 88.1 and 88.2 and Divisions 58.4.1, 58.4.2, 58.4.3a and 58.4.3b south of 60°S in daylight met the requirement to achieve a consistent minimum line sink rate as described

in Conservation Measure 24-02. For 2006/07, the Working Group noted that only one vessel (*Antartic II* in Subareas 88.1 and 88.2), using a variation on the autoline method, used clip-on weights to achieve the sink rate requirements. All autoline vessels are now using IWLs. The Working Group noted that the *Shinsei Maru No. 3*, using a trotline system, met the sink rate requirements in Subarea 48.6 (Part II, paragraph 48).

- (iii) Night setting and offal discharge – 100% compliance with night setting, and also for control of offal discharge in all areas where this was required (Subareas 48.3, 48.4, 58.6 and 58.7) (Part II, paragraph 49 and Table 16). In areas where offal retention is required (Subareas 48.6, 88.1 and 88.2, Divisions 58.4.1, 58.4.2, 58.4.3a, 58.4.3b and 58.5.2), all but two vessels complied fully (Table 16). The *Tronio*, fishing in Divisions 58.4.1 and 58.4.3b, discharged offal on seven occasions due to mechanical problems. The *Ross Mar*, fishing in Subarea 88.1, was observed discarding offal during one haul (Part II, paragraph 50).
- (iv) Discard of hooks – hooks were present in discards on three of 39 longline cruises; this was reported as a rare event on two of these. However, the observer on board the *Insung No. 22* in Subarea 48.3 reported there was no system in place for removing hooks from discards and the discarding of offal with hooks present was a daily occurrence (Part II, paragraph 52; WG-FSA-07/8 Rev. 1, Table 1).
- (v) Streamer lines – the number of cruises complying with streamer line specifications has increased from 80% in 2005/06 to 87% this year (Part II, paragraph 54), although this is not as high as the 92% (34 of 37 cruises) in 2002/03. However, most of the non-compliant vessels had only minor deviations from the requirement. The cruises where streamer lines did not comply failed on streamer lengths (3 cruises), total streamer line length (1 cruise) and branched streamer spacing (1 cruise). One of these vessels, the *Viking Sur*, also failed on two specifications in 2005/06. There was 100% compliance with attachment height (Part II, paragraphs 54 and 55 and Table 16).
- (vi) Haul-scaring devices – one vessel in Subarea 48.3 (*Insung No. 22*, 87%), and one vessel in two cruises in Subareas 58.6 and 58.7 (*Ross Mar*, 0%) did not use haul-scaring devices on all hauls. In all other areas there was 100% compliance (Part II, paragraphs 57 and 58 and Table 16).

I.19 The Working Group noted that the small deviations from full compliance with streamer line configuration had not led to any seabird mortalities (Part II, paragraph 56). However, the Working Group expressed concern at the reported discarding of hooks in offal, given the reports that nest surveys had found a high and increasing level of hooks around nests of wandering albatrosses (Part II, paragraph 53).

I.20 The Working Group expressed some concern at the low number of bottle tests for some vessels (Part II, paragraph 48 and Table 17).

I.21 The Working Group noted a reported increase in the discharge of gear debris, which occurred on five vessels and included the discharge of oil from the *Insung No. 1* (Republic of Korea) and *Ross Star* (Uruguay), the discharge of gear debris from the *Insung Ho* (Republic

of Korea) and *Antartic II* (Argentina) and the discharge of inorganic garbage from the *Insung Ho* (Republic of Korea), *Ross Mar* (South Africa) and *Antartic II* (Argentina) (Part II, paragraph 47; WG-FSA-07/8 Rev. 1, Table 1). This included fishing gear, small sections of line, snoods and plastics. The Working Group noted that these discharges would have additional negative effects on seabirds and marine mammals which could not be quantified.

I.22 The Working Group reiterated its concern that care was needed to ensure accurate reporting of data by observers because inaccurate reporting may have consequences for reviewing the performance of vessels in fisheries.

I.23 Conservation Measure 26-01 prohibits the use of plastic packaging bands to secure bait boxes. The use of other plastic packaging bands is restricted to those vessels with on-board incineration facilities and all bands must be cut and disposed of using this facility. Information from observer reports again indicated 100% implementation of this measure (100% compliance in 2006) (Part II, paragraph 46).

I.24 With respect to Conservation Measure 25-03, a range of mitigation measures were used on board icefish vessels in Subarea 48.3 and Division 58.5.2 and compliance with Conservation Measure 25-03 was generally good (Part II, paragraph 59).

I.25 Two vessels were reported as having used net sonde cables (*Niitaka Maru* and *Saga Sea*). It was unclear whether these were net sonde cables or paravanes, as had been the case in previous years, and the Working Group requested additional information from scientific observers (Part II, paragraph 60).

INCIDENTAL MORTALITY OF SEABIRDS IN FISHERIES OUTSIDE THE CONVENTION AREA (see also Part II, paragraphs 61 to 66)

I.26 The Working Group noted that despite requests, no Members provided written reports on longline seabird by-catch from outside the Convention Area. The Working Group encouraged reporting of new information in 2008.

I.27 A verbal report documented high levels of mortality of Convention Area seabirds in pelagic longline fisheries in southern African waters (Part II, paragraphs 62 to 64). The Working Group noted that when coupled with the levels of mortality reported to the group in 2006 for the South African deep-water hake trawl fishery, it is of great concern that many thousands of albatrosses are estimated to be killed annually in these fisheries, including ca. 5 000 (95% CI 3 000–12 500) black-browed albatrosses, thought to predominantly be from the population breeding at South Georgia (SC-CAMLR-XXV, Annex 5, Appendix D, paragraph 68).

I.28 Given that considerably greater levels of mortality of Convention Area seabirds occur in areas north of the Convention Area, compared to levels within the Convention Area, the Working Group reminded Members of the importance of the standing request to report on seabird mortality for Convention Area species arising from fisheries conducted outside the Convention Area (Part II, paragraph 66; SC-CAMLR-XXV, Appendix D, Table 20, item 3.2).

INCIDENTAL MORTALITY OF SEABIRDS DURING UNREGULATED LONGLINE FISHING IN THE CONVENTION AREA

(see also Part II, paragraphs 67 to 80)

I.29 The overall estimated total for the whole Convention Area in 2006/07 indicates a potential seabird by-catch in the unregulated fishery of 8 212 (95% CI 6 730–21 926) seabirds (SC-CAMLR-XXVI/BG/32). The values for this and previous years are summarised in respect of different parts of the Convention Area in Part II, Table 18 (Part II, paragraph 72).

I.30 In comparison with estimates for previous years, calculated in identical fashion, the value for 2006/07 is broadly similar to the values estimated for the last three years (SC-CAMLR-XXVI/BG/32). These are the lowest reported values since estimates started in 1996. This presumably reflects a commensurate reduction in toothfish removals and/or changes in the areas from where IUU fishing occurs (Part II, paragraph 73).

I.31 The Working Group noted that grey petrels have comprised between 5 and 16% of the catch in the regulated fishery in Division 58.5.1 over the last three years, and undertook to examine methods of estimating the by-catch of this species by IUU vessels within Division 58.5.1 as an intersessional task with a view to assessing the level of take of grey petrels in future years (Part II, paragraph 75).

I.32 As in previous years, it was emphasised that these are very rough estimates (with potentially large errors). The 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. In particular, changes in gear type seen in the regulated fishery would undoubtedly have flowed through to IUU vessels. These gear changes, together with the use of gillnets by IUU vessels, will affect the levels of IUU-fisheries-related by-catch, but are not reflected in the assumptions used to develop these estimates (Part II, paragraphs 76 to 78).

I.33 Nevertheless, the Working Group reiterated its conclusions of recent years that even these levels of incidental mortality of seabirds arising from IUU fishing were of substantial concern and likely unsustainable for some of the populations concerned (Part II, paragraph 79). The Commission was encouraged to continue to take action in respect of incidental mortality of seabirds caused by IUU fishing (Part II, paragraph 80).

RESEARCH INTO AND EXPERIENCE WITH MITIGATION MEASURES

(see also Part II, paragraphs 81 to 117)

Longline

I.34 Noting the success to date within the Convention Area in reducing seabird by-catch, the Working Group again recalled that the mitigation measures used continue to require refinement to potentially allow for fishing at any time of day without seasonal closure of fishing grounds (SC-CAMLR-XIX, paragraphs 4.40 and 4.41). Further, as CCAMLR mitigation measures and practices have been held up as a role model outside the Convention Area and successfully exported to some of those fisheries, research into mitigation measure refinement remains a priority to support the export of best-practice mitigation.

I.35 The Working Group noted an increasingly used modification of the Spanish longline system in fisheries outside the Convention Area (trotline longline system). During line setting, the modified system sinks quickly beyond the range of foraging seabirds (Part II, paragraphs 81 and 84). A trotline/net longline system is now in extensive use throughout southern South America (WG-FSA-07/11, 14 and 23). This new trotline/net longline system is reported to eliminate seabird by-catch and significantly reduce whale depredation with no loss in toothfish CPUE when compared to the Spanish longline system. Although at least one vessel has used the trotline system in the Convention Area (*Shinsei Maru No. 3*), the trotline/net system has not as yet been used in the Convention Area (Part II, paragraphs 82 and 84 to 87). The Working Group recommended that this system should comply with all requirements of Conservation Measure 25-02, including line-weighting requirements, to protect seabirds (Part II, paragraph 83).

I.36 The Working Group noted plans to conduct a trial inside the Convention Area to compare the effectiveness of the trotline/net system with the traditional Spanish system in reducing fish loss to toothed whales. The provisions of Conservation Measures 24-02 and 25-02 will be applied during the trial and a three-bird by-catch limit is proposed (Part II, paragraph 88). The Working Group recognised the importance of the proposed trial for vessels operating in the Convention Area and strongly encouraged expanding the trial in 2007/08 to include as many Spanish longline vessels operating in Subarea 48.3 as possible to increase the data acquisition rate on the trotline/net method and enable CCAMLR to quickly understand the comparative effects of the two gear types (Part II, paragraph 89).

I.37 Noting the results of trials that examined the sink rate relationships between traditional Spanish system weights (netting bags of rocks) and elliptical, or torpedo-shaped, steel weights (Part II, paragraph 90), the Working Group recommended that Conservation Measure 25-02 be modified to provide Spanish longline system vessel operators the option of using either traditional weights (netting bags of rocks) under the current two mass/spacing regimes or, steel weights (solid steel and not chain links) under a mass/spacing regime of ≥ 5 kg mass spaced at intervals of no more than 40 m. The Working Group noted that operators should consider the shape of steel weights and recognise that torpedo-shaped or spherical weights are the most hydrodynamic (Part II, paragraph 91).

I.38 The Working Group expressed concern about reports that nest surveys had found a high and increasing level of hooks around nests of wandering albatrosses and embedded in wandering albatrosses. The Working Group strongly encouraged the UK to present a paper to ad hoc WG-IMAF on its survey work and, in particular, hook ingestion and hook body piercing, to its 2008 meeting (Part II, paragraph 93). There is anecdotal evidence that the increase in hook ingestion may be linked to the increasing use of the trotline/net system outside the Convention Area and the discard of by-catch with embedded hooks from vessels using this gear. In recognition of the severity of the problem and its assessment by the UK (SC-CAMLR-XXVI/BG/18), the Working Group recommended that CCAMLR produce a poster instructing crews to remove hooks from all landed fish and hauled baits. The estimated cost of the production of such posters is AU\$5 000 (Part II, paragraph 94).

I.39 The Working Group recommended that (Part II, paragraphs 94 and 95):

- (i) CCAMLR produce the A3 poster in colour, in all CCAMLR languages, as well as Indonesian, Korean and Japanese. It should be waterproof and on plastic for display in wet areas on vessels;

- (ii) the Secretariat distribute the poster via technical coordinators to all longline vessels operating in the Convention Area early in the 2007/08 season as a priority;
- (iii) the Secretariat, via technical coordinators, instruct vessel operators to display a poster in at least four strategic locations on vessels, including in fish processing factories, in line hauling bays in easy view of crews hauling gear, and in areas inboard of hauling areas where crews process hauled baits/hooks;
- (iv) scientific observers be instructed to report on whether the poster is displayed on vessels and reminded of the need to monitor hook removal;
- (v) Members operating the Spanish method of longlining (both traditional and trotline methods) outside the Convention Area adopt the use of the poster and provide posters to their longline vessels for on-board display.

I.40 Noting the importance of evaluating the effect of seabird mitigation technologies on the catch rates of all taxa (Part II, paragraph 97), with respect to future improvements to Conservation Measures 24-02 and 25-02, the Working Group recommended:

- (i) tests of the efficacy of the new trotline/net longline system line-weighting regime as a seabird deterrent and for operational characteristics (Part II, paragraph 87);
- (ii) testing the effectiveness of paired streamer lines in Southern Ocean conditions with common seabird assemblages (Part II, paragraph 110).

I.41 Given the continued substantial proportion of seabirds caught during longline haul operations in the Convention Area in 2006/07 (Part II, paragraphs 104 to 107), the Working Group noted two effective mitigation devices – the ‘moon pool’ and the Brickle curtain (Part II, paragraph 107). The Working Group encouraged technical coordinators to instruct observers to collect information on haul mitigation devices used in the Convention Area (Part II, paragraphs 108 to 109).

Trawl

I.42 Noting trials conducted in New Zealand to determine the effects of mealing, mincing and batching all offal before discharge on seabird abundance around trawlers, the Working Group discussed offal retention and discharge options on trawl vessels recognising the operational constraints on some older and smaller vessels operating in the Convention Area. The Working Group noted that potential options for discharge management, such as underwater discharge and maceration, had not been tested to their full potential either inside or outside the Convention Area (Part II, paragraphs 111 to 115).

I.43 The Working Group noted that three seasons of operational experience indicate net binding is a highly effective and easily accomplished mitigation measure for pelagic trawl fisheries and that there is increasing evidence that in combination with net cleaning, net binding may be responsible for reductions in seabird mortality during setting operations (Part II, paragraph 116).

I.44 Noting the continued success of net binding in Subarea 48.3, the Working Group reiterated the Scientific Committee's recommendation to test its utility as appropriate in other Convention Area pelagic finfish trawl fisheries (Part II, paragraph 117).

OBSERVER REPORTS AND DATA COLLECTION (see also Part II, paragraphs 118 to 126)

I.45 The Working Group supported the proposal of the Secretariat that Members:

- (i) develop a standard set of training and educational standards to augment current domestic training programs;
- (ii) consider the feasibility of developing a process whereby national observer programs are accredited to consistent international standards;
- (iii) encourage and support national technical coordinators to attend WG-FSA and ad hoc WG-IMAF meetings and consider maximising such opportunities by convening training workshops for coordinators (Part II, paragraphs 118 and 119).

I.46 The Working Group reviewed data collection needs relative to several areas of seabird and marine mammal interaction and mitigation and recommended additions or changes to logbooks and cruise reports, including:

- (i) improved reporting on the use of net sonde cables (Part II, paragraph 60);
- (ii) net binding (Part II, paragraph 117);
- (iii) distinguishing which of the three longline fishing methods, or combination of, was in use on a vessel, either the Spanish system, autoline system or the trotline system (Part II, paragraph 11);
- (iv) improved reporting on the warp-strike protocol (Part II, paragraphs 120 and 123 to 125);
- (v) information on haul mitigation devices used in the Convention Area (Part II, paragraphs 108 and 109).

I.47 The Working Group was concerned that the reported percentage of hooks observed fell below the recommended minimum of 20% on several vessels in 2006/07 (as low as 0%) and recommended that clarification be sought from the Members which designated the international observers for these cruises (Part II, paragraph 10).

I.48 The Working Group noted that the quality of observer data which had been submitted continued to improve and thanked technical coordinators and observers for their efforts in the last year. However, the Working Group noted that improvements could still be made in the reporting of observer data and encouraged technical coordinators and observers to continue to fully implement the specifications of the various observer protocols and report all required data (Part II, paragraph 126).

RESEARCH INTO THE STATUS AND DISTRIBUTION OF SEABIRDS

(see also Part II, paragraphs 127 to 131)

I.49 The Working Group welcomed a report from the Third Meeting of the ACAP Advisory Committee and was encouraged by the progress on the assessments of ACAP-listed species. Given its comprehensive coverage of Convention Area seabirds at risk from fisheries-related mortality and information on the foraging distribution and interactions with fisheries operating in RFMOS and EEZs, the Working Group agreed that it will be very useful for ad hoc WG-IMAF's work (Part II, paragraphs 127 and 128).

I.50 The Working Group received information on an evaluation of the impact of fisheries on the populations of white-chinned and grey petrels of the Crozet and Kerguelen Islands based on mark-recapture studies, estimation of breeding success, adult survival and population estimation. The Working Group applauded France for its efforts in this area, and looked forward to reviewing the publication that presents these analyses in detail in 2008 (Part II, paragraph 130). France has initiated a three-year study of foraging distribution with the objective to examine the pelagic distribution of seabirds breeding in the French Antarctic and sub-Antarctic areas which will provide important information on the distribution of seabirds both inside and beyond the Convention Area (Part II, paragraph 131).

ASSESSMENT OF RISK IN CCAMLR SUBAREAS AND DIVISIONS

(see also Part II, paragraphs 132 to 153)

I.51 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 (SC-CAMLR-XXVI/BG/31). There were no changes to levels of risk this year (Part II, paragraphs 132 to 134).

I.52 The Working Group noted a tabled description of the ad hoc WG-IMAF risk assessment (WG-FSA-07/P2) and recommended that this paper be widely disseminated, including to other RFMOs which could consider the experience of CCAMLR when developing approaches to minimising by-catch in their own fisheries. The Secretariat was asked to assist in this (Part II, paragraphs 135 and 136).

I.53 The risk assessment, originally confined to longline fisheries, was extended to trawl fisheries this year following a request from the Commission to do so (CCAMLR-XXV, paragraphs 5.21 to 5.24). The revised assessments incorporating advice in relation to trawl gear (with changes/additions underlined) have been combined into a background document for use by the Scientific Committee and Commission (SC-CAMLR-XXVI/BG/31). The assessments now incorporate advice on operational measures that should be applied to pelagic trawling operations to minimise by-catch. In developing this advice, the Working Group drew upon the considerable observer data that have been collected across CCAMLR trawl fisheries. This shows that the risks to seabirds are strongly gear-dependent, with pelagic trawling for finfish posing the highest risk (Part II, paragraphs 137 to 143).

I.54 The Working Group developed a set of best-practice mitigation measures for pelagic finfish trawling gear and recommended that they be applied for all CCAMLR statistical

subareas and divisions. A summary of the assessment of risk to seabirds posed by pelagic finfish trawl fisheries and associated mitigation requirements is provided in Table 19 and SC-CAMLR-XXVI/BG/31 (Part II, paragraph 144).

I.55 The Working Group noted that by-catch in existing finfish fisheries in category 4 and 5 risk areas was minimal despite current conservation measures for fisheries in those areas not containing all elements of the best-practice guidelines and a different suite of mitigation measures being used in each fishery. The Working Group did not consider that there was a need for additional mitigation measures beyond those currently in use in those fisheries, provided the current zero or near-zero by-catch levels are continued or decreased respectively (Part II, paragraph 145).

I.56 With respect to pelagic trawling gear for krill and demersal trawling gear targeting finfish where offal retention occurs, no clear evidence is available to suggest that these methods pose a serious risk to seabirds in the Convention Area at this stage (Part II, paragraphs 146 and 147). For this reason, mitigation measures additional to those required by Conservation Measure 25-03 are not considered necessary at present for these gear types.

I.57 The Working Group reviewed WG-FSA-07/55 which proposed for Subarea 48.3 a relaxation of the limitation of icefish catch that may be taken between 1 March and 31 May and the requirement to undertake research trawls in this period. Ad hoc WG-IMAF agreed that the change is unlikely to lead to an increased risk to seabirds from this fishery, provided that the best-practice mitigation measures are used year-round (Part II, paragraph 148).

I.58 The Working Group reviewed WG-FSA-07/17, a proposal for season extension in Division 58.5.2. In respect of the proposal to include 1 to 30 September as part of the 'core' winter season and to remove the three-seabird by-catch limit presently applied to that period, the Working Group noted that while fishing had occurred in four seasons for the first half of September, there had been fishing in the latter half of September in only one season. For this reason, the Working Group recommended that 1 to 14 September could be included in the core season and not subject to the three-seabird by-catch limit, but that the three-seabird by-catch limit should continue to apply to fishing during the period from 15 to 30 September. The Working Group noted that fishing during October was moving progressively closer to the seasonal period when seabird abundance, especially of white-chinned petrels, increased significantly and that this species was the most likely to interact with fishing operations and the most difficult to mitigate against. The Working Group supported the proposal to trial fishing from 1 to 31 October, and recommended it proceed subject to a three-seabird by-catch limit (Part II, paragraphs 149 to 151).

INCIDENTAL MORTALITY OF SEABIRDS IN RELATION TO NEW AND EXPLORATORY FISHERIES (see also Part II, paragraphs 154 to 165)

I.59 Of the 41 applications for exploratory longline fisheries for 2006/07, 28 were undertaken (Part II, paragraph 154). No incidental seabird mortality was observed.

I.60 The 44 proposals by 12 Members for exploratory fisheries in seven subareas/divisions of the Convention Area in 2007/08 were addressed in relation to the advice in Part II, Figure 1

and Table 20, and SC-CAMLR-XXVI/BG/31. The results, summarised in Part II, paragraphs 158 to 160, involve two categories: those that provide sufficient information and are assessed as conforming with advice relating to incidental mortality of seabirds (Part II, paragraph 158), and those that contain insufficient information to be certain that they conform with advice relating to incidental mortality of seabirds (Part II, paragraph 159). Applications by the Republic of Korea (CCAMLR-XXVI/16) and Uruguay (CCAMLR-XXVI/24) fall into the latter category. The Working Group noted that, as for last year (SC-CAMLR-XXV, paragraph 5.36(iii)), these inconsistencies should be able to be resolved easily, but suggested this was a task for SCIC (Part II, paragraph 162).

I.61 The Working Group welcomed improvements in notifications this year and requested that Members take greater care in future submissions to ensure that the intent to comply with relevant seabird by-catch measures was clear (Part II, paragraph 161).

I.62 The Working Group was pleased with the number of Members that utilised the checklist and encouraged those that did not do so (Republic of Korea and South Africa), or altered the checklist without explanation (Uruguay), to use the pro forma and checklist in full in future notifications. The Working Group noted that, as the notification from Uruguay (CCAMLR-XXVI/24) had not been translated, it was uncertain whether the relevant information was contained within the document (Part II, paragraph 163).

I.63 The Working Group reiterated its recommendation that any vessel operating under the provisions of Conservation Measure 24-02, and which catches a total of three (3) seabirds, as defined in SC-CAMLR-XXII, Annex 5, paragraphs 6.214 to 6.217, shall revert to night setting in accordance with Conservation Measure 25-02 (Part II, paragraph 164).

I.64 The Working Group discussed CCAMLR-XXVI/27, proposing improvements to line sink rate monitoring and reporting and noted that, as the proposal had no technical implications for the work of ad hoc WG-IMAF, it was a matter for SCIC (Part II, paragraph 165).

INTERNATIONAL AND NATIONAL INITIATIVES RELATING TO INCIDENTAL MORTALITY OF SEABIRDS IN RELATION TO LONGLINE FISHING (see also Part II, paragraphs 166 to 195)

I.65 Information was reported on current international initiatives under the auspices of:

- (i) ACAP – items of particular relevance to CCAMLR including ACAP’s newly formed Seabird Bycatch Working Group (Part II, paragraphs 166 to 168);
- (ii) FAO (IPOA-Seabirds) – noting COFI’s agreement (pending cost considerations) to develop best-practice technical guidelines for NPOA-Seabirds and RFMOs, that the guidelines should extend to other relevant fishing gears, and that FAO could undertake this work through an expert consultation and in cooperation with CCAMLR, ACAP and BirdLife International (Part II, paragraph 169);
- (iii) Joint meeting of tuna RFMOs – Secretariat-provided information on CCAMLR’s processes in developing its seabird by-catch mitigation measures (Part II, paragraphs 171 to 174);

- (iv) RFMOs – no responses received to CCAMLR Resolution 22/XXV but updates on WCPFC, ICCAT, CCSBT, IOTC and IATTC (Part II, paragraphs 175 to 187).

I.66 The Working Group noted several ACAP work products (Species Assessments by the Status and Trends Working Group, research plan for pelagic longline mitigation technologies by the Seabird Bycatch Working Group) (Part II, paragraphs 127, 128 and 168) of utility as RFMOs consider seabird assessments and seabird by-catch mitigation measures. The Working Group recommended that the Scientific Committee encourage Members to use and promote these ACAP resources, as appropriate.

I.67 The Working Group reiterated its support for the development of best-practice technical guidelines for the development of NPOA-Seabirds, to be used by countries and RFMOs and to include other relevant gear types (Part II, paragraph 169). This effort is important where RFMOs manage fisheries in waters adjacent to the Convention Area, particularly where seabird species which breed and forage in the Convention Area may be distributed (Part II, paragraph 191).

I.68 The Working Group was encouraged by the progress made at some of the RFMOs toward addressing the issue of seabird by-catch in their fisheries, particularly at WCPFC and ICCAT, including the initiation of risk assessments in both RFMOs to better assess the level of interactions between seabirds and the fisheries within their Convention Areas and the adoption of binding seabird conservation measures at the WCPFC (Part II, paragraphs 189 and 190).

I.69 The Working Group requested that the Scientific Committee extend an offer of technical assistance on conducting seabird risk assessments generally to other RFMOs should they desire such support (Part II, paragraphs 189 and 193), and further recommended that the Scientific Committee stress the need for assessing risk to seabird populations and for mitigating such risks via adaptive and precautionary decision-making, including the use of adequate levels of observer coverage and detailed reporting of implementation of conservation measures to truly achieve reductions in seabird by-catch (Part II, paragraph 192).

I.70 With regard to the effectiveness of Resolution 22/XXV, the Working Group:

- (i) expressed concern at the general lack of progress in RFMOs (Part II, paragraph 194);
- (ii) reaffirmed that a key to progress is the employment of robust scientific observer programs (Part II, paragraph 194);
- (iii) encouraged the Secretariat to continue to contact Flag States whose vessels fish in areas where unregulated fishing takes place or where systematic data reporting has not yet been introduced (Part II, paragraph 195);
- (iv) noted the lack of reporting as required under paragraph 5 of Resolution 22/XXV (Part II, paragraph 195);
- (v) encouraged Contracting Parties to provide information on this matter in the future (Part II, paragraph 195).

I.71 The Working Group recommended that a standing invitation be extended by the Scientific Committee to ACAP and BirdLife International to participate in future meetings of ad hoc WG-IMAF as invited experts (Part II, paragraph 188).

FISHERY REPORTS

(see also Part II, paragraphs 196 to 198)

I.72 The Working Group recommended that the process of updating Fishery Reports with information relating to the by-catch of seabirds and marine mammals continue and noted that this process provided constructive interaction with WG-FSA and contributed to the streamlining of the work of the Scientific Committee's working groups.

STREAMLINING THE WORK OF THE SCIENTIFIC COMMITTEE

(see also Part II, paragraphs 199 to 211)

I.73 Ad hoc WG-IMAF noted that its revised agenda for this year's meeting was a useful improvement. The Working Group recommended future agenda improvements (Part II, paragraph 199), including:

- (i) discontinue the current method for estimation of IUU catches of seabirds but, if feasible, develop alternate methods;
- (ii) a review of its agenda to identify those tasks which could be completed on a biennial and triennial basis to allow more time to undertake high-priority tasks.

I.74 Ad hoc WG-IMAF noted the improved interactions with WG-FSA this year on matters of mutual interest (observer and by-catch matters, mitigation measures and impacts on other taxa) and thus enhancing the quality of advice to the Scientific Committee and providing a useful element of peer review during meetings (Part II, paragraph 200).

Future focus of the work of ad hoc WG-IMAF and a workshop proposal

I.75 The Working Group noted the continued very positive results again this year with respect to seabird and marine mammal by-catch throughout the Convention Area and highlighted an increasing need to focus on the by-catch of Convention Area seabirds outside the Convention Area given CCAMLR's responsibility for these Antarctic marine living resources (Convention Article I). Continued vigilance in the monitoring of by-catch and the implementation of conservation measures is needed to continue to strive to minimise seabird and marine mammal by-catch in all Convention Area fisheries and to avoid time delays in responding to changing fishery dynamics and by-catch rates which could have serious consequences for the conservation of seabirds and marine mammals. Noting that a biennial meeting of ad hoc WG-IMAF may mean three-year delays between the recognition of a problem and the development of a solution, the Working Group recommended that annual meetings continue (Part II, paragraphs 202 to 204).

I.76 Based on last year's discussion (SC-CAMLR-XXV, Annex 5, paragraph 7.64) and discussions this year (Part II, paragraphs 202 to 211), the Working Group recommended a one-day workshop immediately prior to ad hoc WG-IMAF in 2008 to address critical medium-term items and the future focus of ad hoc WG-IMAF. The Working Group requested the Scientific Committee's endorsement of the workshop and the following proposed terms of reference:

- (i) review and recommend revisions to the terms of reference for ad hoc WG-IMAF;
- (ii) develop short- and medium-term work plans for ad hoc WG-IMAF, particularly considering the work plan of WG-FSA for dealing with mitigation of the by-catch of fish and invertebrate by-catch, the work plan of the Scientific Committee and developments in other international bodies concerned with the interaction of fisheries and Convention Area birds or mammals;
- (iii) review the frequency of meetings of ad hoc WG-IMAF, in particular:
 - (a) consider the conditions under which a change in meeting frequency could take place and catalogue the advantages and disadvantages of such change;
 - (b) examine in detail the consequences of decreasing the frequency of WG-IMAF meetings on the work of WG-IMAF and the advice that it is able to provide WG-FSA, the Scientific Committee and the Commission;
 - (c) consider mechanisms that could be put in place to minimise the risk of impacting significantly on the work of WG-FSA, the Scientific Committee and Commission were the ad hoc WG-IMAF meeting frequency to be reduced.

OTHER BUSINESS

I.77 Addressing several of the agenda items required the Working Group to attempt to evaluate working papers submitted in languages other than English. These agenda topics include evaluation of: a notification of a new and exploratory fishery (Part II, paragraph 163), the new trotline/net system used to reduce whale depredation and seabird by-catch (Part II, paragraph 85), and efforts in the French EEZs in Subarea 58.6 and Division 58.5.1, the only remaining part of the Convention Area with substantial seabird by-catch levels (Part II, paragraphs 20 and 130). The Working Group's ability to adequately and effectively address these topics was hampered by the lack of translated text. Particularly for future efforts by ad hoc WG-IMAF to assist with seabird by-catch reductions in the French EEZ, the Working Group requested the Scientific Committee to consider, on a case-by-case basis, the translation of key documents.

PART II

**REPORT OF THE AD HOC WORKING GROUP ON
INCIDENTAL MORTALITY ASSOCIATED WITH FISHING**
(Hobart, Australia, 8 to 12 October 2007)

CONTENTS

	Page
INTERSESSIONAL WORK OF AD HOC WG-IMAF	433
INCIDENTAL MORTALITY OF SEABIRDS AND MARINE MAMMALS IN FISHERIES IN THE CONVENTION AREA	434
Seabirds	434
Seabirds in longline fisheries.....	434
Seabirds in longline fisheries excluding those within the French EEZs in Subarea 58.6 and Division 58.5.1	434
Seabird mortality in the French EEZs in Subarea 58.6 and Division 58.5.1	435
Seabirds in trawl fisheries	439
Subarea 48.3 icefish	439
Division 58.5.2 toothfish/icefish.....	440
Krill	440
Seabirds in pot fisheries	440
Marine mammals	441
Marine mammals in longline fisheries	441
Marine mammals in trawl fisheries	441
Krill	441
Finfish	441
Marine mammals in pot fisheries	441
Information relating to the implementation of Conservation Measures 26-01, 25-02, 25-03	441
Conservation Measure 26-01 ‘General environmental protection during fishing’	442
Plastic packaging bands	442
Gear debris and garbage.....	442
Conservation Measure 25-02 ‘Minimisation of the incidental mortality of seabirds in the course of longline fishing or longline fishing research in the Convention Area’	442
Line weighting	442
Night setting and offal discharge	443
Discard of hooks	443
Streamer lines	443
Haul-scaring devices	444
Conservation Measure 25-03 ‘Minimisation of the incidental mortality of seabirds and marine mammals in the course of trawl fishing in the Convention Area’	444
Net sonde cables	444
INCIDENTAL MORTALITY OF SEABIRDS AND MARINE MAMMALS IN FISHERIES OUTSIDE THE CONVENTION AREA	444
INCIDENTAL MORTALITY OF SEABIRDS DURING UNREGULATED LONGLINE FISHING IN THE CONVENTION AREA	446

RESEARCH INTO AND EXPERIENCE WITH MITIGATION MEASURES	448
Longlines	448
Trotline variation of the Spanish longline system and the Chilean trotline/net system	448
Steel weights on Spanish longline system and trotlines	450
Hook retention	451
Integrated weight longlines	452
Sink rates	452
Longline bait	453
Haul-scaring devices	453
Paired streamer lines	454
Trawl	455
Offal management	455
Net binding	455
OBSERVER REPORTS AND DATA COLLECTION	456
Observer data collection	456
Trawl	456
Progress of a trawl warp cable data collection protocol for inside the Convention Area	457
General	458
RESEARCH INTO THE STATUS AND DISTRIBUTION OF SEABIRDS	458
ASSESSMENT OF RISK IN CCAMLR SUBAREAS AND DIVISIONS	459
Trawl risk assessment	459
Implications of seasonal changes in fishing activity in Subarea 48.3	461
Proposal for season extension in Division 58.5.2	461
Fine-scale risk assessment	462
INCIDENTAL MORTALITY OF SEABIRDS IN RELATION TO NEW AND EXPLORATORY FISHERIES	463
New and exploratory fisheries operational in 2006/07	463
New and exploratory fisheries proposed for 2007/08	463
INTERNATIONAL AND NATIONAL INITIATIVES RELATING TO INCIDENTAL MORTALITY OF SEABIRDS IN RELATION TO LONGLINE FISHING	465
ACAP	465
FAO IPOA-Seabirds	465
Other international organisations and initiatives, including non-governmental organisations	466
RFMOs, tuna commissions and international governmental organisations and implementation of Resolution 22/XXIII	466
Joint meeting of tuna RFMOs	466
WCPFC	467
ICCAT	467
CCSBT	468
IOTC	469

IATTC	469
General	469
FISHERY REPORTS	471
STREAMLINING THE WORK OF THE SCIENTIFIC COMMITTEE	471
Streamlining of agenda.....	471
Interaction with WG-FSA	471
Future focus of the work of ad hoc WG-IMAF	472
Future research plan and duration of the meeting	472
WG-IMAF 2008 workshop	473
REFERENCES	473
TABLES	475
FIGURES	507
APPENDIX A: Agenda.....	509

Please note:

For a List of Participants and List of Documents, please refer to the Report of WG-FSA-07 in Annex 5, Appendix B and C respectively.

PART II

REPORT OF THE AD HOC WORKING GROUP ON INCIDENTAL MORTALITY ASSOCIATED WITH FISHING

(Hobart, Australia, 8 to 12 October 2007)

INTERSESSIONAL WORK OF AD HOC WG-IMAF

II.1 The Secretariat reported on the intersessional activities of ad hoc WG-IMAF according to the agreed plan of intersessional activities for 2006/07 (SC-CAMLR-XXV, Appendix D, Table 20). The report contained records of all activities planned and is available on the ad hoc WG-IMAF page of the CCAMLR website.

II.2 The Working Group thanked the Science Officer for his work on the coordination of ad hoc WG-IMAF intersessional activities and the technical coordinators of national observer programs for their support. The Working Group 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 2006/07 fishing season.

II.3 The Working Group concluded that most tasks planned for 2006/07 had been successfully implemented. Much of the information requested intersessionally had been presented to the Working Group in papers submitted to the meeting. The list of current intersessional tasks was reviewed and a number of changes were agreed in order to consolidate specific tasks in future plans. The Working Group agreed that the plan of intersessional activities for 2007/08, compiled by the Co-conveners and the Science Officer, be appended to its report (Table 21).

II.4 The Working Group especially welcomed to the meeting Mr C. Marteau (France), Mr N. Walker (New Zealand) and Ms N. LeBoeuf (USA) who were attending the meeting for the first time. The Working Group appreciated Mr M. McNeill's (New Zealand) continued expert advice on operational aspects of fishing and encouraged analogous input from other Members, including in relation to trawl fisheries. Members were asked to review their representation on ad hoc WG-IMAF intersessionally, to suggest additional members and to facilitate the attendance of their representatives at the meetings.

II.5 The Working Group greatly appreciated the participation of national technical coordinators who provided invaluable experience to the Working Group as it addressed numerous observer-related and data collection issues. In addition to the continued participation of technical coordinators at future meetings, ad hoc WG-IMAF would also welcome the participation of its South American Members.

INCIDENTAL MORTALITY OF SEABIRDS AND MARINE MAMMALS IN FISHERIES IN THE CONVENTION AREA

Seabirds

II.6 The total extrapolated seabird mortalities due to interactions with fishing gear during longline fishing for *Dissostichus* spp. in the Convention Area, with the exception of the French EEZs in Subarea 58.6 and Division 58.5.1, was estimated to be zero. When seabird mortalities reported from fisheries in the French EEZ within the Convention Area are included, the total seabird mortalities during longline fishing operations in 2006/07 were estimated to be 2 257, all petrels. This estimate includes 313 seabirds in Subarea 58.6 and 1 944 seabirds in Division 58.5.1.

II.7 Observers reported a total of eight seabird mortalities during trawling for finfish in the Convention Area; of these, six seabird mortalities, including four albatrosses and two petrels, occurred during trawling in Subarea 48.3 and two petrels were killed during trawling in Division 58.5.2. No seabird mortalities were reported during trawling for krill or during pot fishing.

Seabirds in longline fisheries

Seabirds in longline fisheries excluding those within the French EEZs in Subarea 58.6 and Division 58.5.1

II.8 Data were available from all longline cruises conducted within the Convention Area, excluding those within the French EEZs in Subarea 58.6 and Division 58.5.1, during the 2006/07 season (Table 1).

II.9 The Working Group noted that the proportions of hooks observed were similar to those observed last year for Subarea 48.3 (27% (range 14–42) compared with 29% (range 18–39)). The proportions of hooks observed were slightly increased for Subareas 88.1 and 88.2 (53% (range 19–96) compared with 45% (range 20–74)); slightly increased for Division 58.5.2 (37% (range 35–39) compared with 33% (range 30–34)); the same for Subarea 48.6 (50% compared with 50%); slightly reduced for Subarea 58.4 (67% (range 0–100) compared with 70% (range 47–100)); and significantly reduced for Subareas 58.6 and 58.7 (17% (three vessels) (range 13–18) compared with 35% (one vessel)) (Table 1).

II.10 The Working Group expressed concern at the reporting of 0% of hooks observed on board the *Jung Woo No. 2* (Republic of Korea) on one cruise to Subarea 48.6, Divisions 58.4.1, 58.4.2, 58.4.3a and 58.4.3b, and during another cruise to Subareas 88.1 and 88.2. The Working Group was also concerned that the percentage of hooks observed fell below the recommended minimum of 20% on several vessels. The vessels concerned were the *Argos Georgia* (UK) (Subarea 48.3, 14%), *Yantar* (Russia) (Subareas 88.1 and 88.2, 19%), *Koryo Maru No. 11* (South Africa) (Subareas 58.6 and 58.7, 18%) and *Ross Mar* (South Africa) (Subareas 58.6 and 58.7, 13 and 16%). The Working Group recommended that clarification be sought from the Members which designated the international observers for these cruises. Mr C. Heinecken (South Africa) noted that on both the *Ross Mar* and *Koryo Maru No. 11* fishing in the South African EEZ (Subareas 58.6 and 58.7), only one observer

was deployed at a time. The observers reported that due to the low fish catch rates, additional time was spent in the factory to obtain the target number of fish measurements specified in their sampling instructions.

II.11 The Working Group noted that there was a need for observers to distinguish which of the three fishing methods, or combination of, was in use on a vessel, either the Spanish system, autoline system or the trotline system.

II.12 The total number of observed mortalities, excluding those within the French EEZs in Subarea 58.6 and Division 58.5.1, was zero (Table 2). The total extrapolated mortality for 2006/07 excluding those within the French EEZs in Subarea 58.6 and Division 58.5.1 was also zero (Table 2). This compared to two birds estimated killed, excluding those within the French EEZs in Subarea 58.6 and Division 58.5.1, in 2005/06.

II.13 The total number of seabirds observed caught and released uninjured, excluding those within the French EEZs in Subarea 58.6 and Division 58.5.1, was seven (Table 1). The Working Group noted that the incidence of birds being caught injured and uninjured (i.e. birds that are caught on the haul), accounted for 100% of seabird captures in 2006/07. This suggests that a focus on haul mitigation measures remains important for the entire Convention Area.

Seabird mortality in the French EEZs in Subarea 58.6 and Division 58.5.1

II.14 In 2006/07, data were available from 18 cruises in Subarea 58.6 and 22 cruises in Division 58.5.1. The proportion of hooks observed was 25.52 and 25.26% respectively (Table 3). In 2006/07 the total reported seabird mortality from observers for Subarea 58.6 and Division 58.5.1 was 80 and 491 birds respectively (Table 4). The corresponding incidental mortality rates were 0.0650 and 0.0798 birds/thousand hooks (Table 5). The extrapolated total seabird mortalities for Subarea 58.6 and Division 58.5.1 were 313 and 1 944 respectively (Table 5). All vessels in the French EEZs were autoliners using at least 50 g m⁻¹ IWLs in 2006/07, compared with one such vessel in the previous season. In Subarea 58.6, 87.5% of the birds were caught by two out of seven vessels, and in Division 58.5.1, 63% of captures were by three out of seven vessels. This may indicate that there are individual vessel effects that need to be examined to further reduce seabird captures in these areas.

II.15 Similar to last year, the Working Group noted that 32% of seabirds observed captured were caught alive, indicating that they were taken on the haul (Table 3). This emphasises a need to focus on haul mitigation measures to further reduce seabird by-catch in these fisheries.

II.16 The Working Group recognised that France has continued to reduce its total seabird by-catch each successive year and noted the efforts made to achieve this result in 2006/07 (a 13% decrease from the combined total estimated by-catch in the previous season for Subarea 58.6 and Division 58.5.1) (Table 6). However, concern was expressed by the Working Group about the current level of seabird captures, noting that white-chinned petrels, which form a substantial proportion of the by-catch (Table 7), are globally threatened.

II.17 The Working Group recommended that France strives to eliminate the incidental mortality of seabirds in accordance with CCAMLR policies and practices (IMAF Terms of Reference, SC-CAMLR-XII, paragraph 10.19; SC-CAMLR-XVII, paragraph 4.71; Conservation Measure 25-02).

II.18 The Working Group noted SC-CAMLR-XXVI/6 which discussed recommendations made by the Scientific Committee in 2006 on seabird by-catch within the French EEZs in Subarea 58.6 and Division 58.5.1. The Working Group noted that France considered a greater level of observer coverage as being problematic to implement. The Working Group suggested that, in addition to improving observed proportions of hooks set, it would be desirable to increase the detail of observer data collection protocols, in order to better analyse factors affecting by-catch of seabirds in these fisheries.

II.19 The Working Group developed specifications of data which could be considered for inclusion into observer protocols, to be gathered across the current 25% of hooks observed, or for a greater proportion of hooks where possible. The Working Group's recommendations for additional data for observers to record are as follows:

- (i) TDR measurements of line sink rate representatively across fishing effort;
- (ii) specifications of the streamer lines for each set, and any gear failures;
- (iii) use of other mitigation devices or practices, including type, frequency of use and detailed specification of these devices;
- (iv) offal discharge, including loss of baits or partial baits during any part of the fishing operation;
- (v) experience of the vessel master and key crew members (e.g. years of experience and experience on the vessel used that season);
- (vi) height of the departure point of of the hookline from the vessel during setting;
- (vii) condition of baits at the point of setting (whether they are firm, friable, frozen and bait loss rate etc.).

II.20 The Working Group noted that SC-CAMLR-XXVI/BG/21 and BG/22 were submitted, although these were available in French only. Mr Marteau presented the information contained in these papers, and the Working Group welcomed his offer to submit the full translation of these analyses once they were published, and in time for ad hoc WG-IMAF in 2008. The Working Group recommended that the detailed analyses of the population responses to fisheries and environmental factors be submitted for review to WG-SAM, and that WG-SAM report on the review to WG-IMAF in 2008. The information presented by Mr Marteau showed that France had responded to the 2006 requests of the Scientific Committee to provide:

- (i) a thorough analysis of data for the 2003/04 to 2005/06 seasons (SC-CAMLR-XXVI/BG/21);
- (ii) additional information on the nature of captures, the factors affecting captures, and details of mitigation devices used (Tables 7 to 9).

II.21 Noting that France had submitted the full suite of data on seabird captures and implementation of conservation measures before the submission deadline for 2007, the Working Group requested that France supply all observer data in the format as specified by SC-CAMLR-XXV (SC-CAMLR-XXV, Annex 5, Appendix D, paragraphs 17 to 20).

II.22 The summary of the analyses presented by Mr Marteau indicated that area and season were the key variables affecting incidental mortality. Seabirds were caught on the set and haul of longline operations, and most of the captures were of white-chinned petrels, with grey petrels comprising an important, but more minor, component of the by-catch (9–16% of birds caught depending on year) (Tables 7 and 9). The Working Group noted that high capture rates were restricted to a few vessels in both areas of the French EEZ, and were at times linked to operational problems in the fishery (e.g. gear becoming jammed during line setting). The Working Group noted that analyses specifically addressing these factors would be beneficial.

II.23 The Working Group noted that France had put in place measures to reduce incidental mortality, including a fishery closure in Division 58.5.1 around the Kerguelen Islands during mid-February to mid-March to avoid high-risk times of year for incidental mortality of seabirds and use of IWLs and other mitigation measures. Further, France had established a new law (Arrêté no. 2007-99 of 26 July 2007) to enable closure of the fishery in Division 58.5.1 if a by-catch limit of grey petrels was exceeded by the fishery. The limit is to be established based on scientific advice. The reporting of observed effort shows that captures of grey petrels are decreasing through time. In order to examine the impact on the grey petrel population of current and past levels of incidental mortality, the Working Group anticipates submission of the detailed demographic modelling analysis for review in 2008 (paragraph 20).

II.24 The Working Group expressed concern that the grey petrel population at Kerguelen Islands had decreased in recent years (SC-CAMLR-XXVI/BG/22) and that any additional adult mortality could increase the vulnerability of the population.

II.25 Mr Marteau welcomed suggestions from the Working Group for potential improvements to mitigation devices or fishing practices that would aid further reductions in seabird by-catch. The Working Group suggested that France consider broadening the set of mitigation measures used, particularly during the haul (paragraph 107). These measures had been trialled on several vessels fishing in the French EEZs, and expanding their use to other vessels is likely to be beneficial.

II.26 The Working Group suggested the vessels fishing within the French EEZs should follow mitigation practices used by New Zealand's large autoline vessels fishing for ling (*Genypterus blacodes*) within the New Zealand EEZ in order to reduce seabird by-catch. The current fishing practices of these vessels include (many of which it is clear that France is already implementing):

- (i) retention of offal during fishing;
- (ii) baits lost during setting are retained and not discharged;
- (iii) strict use of IWLs;

- (iv) streamer lines in strict compliance with the CCAMLR standard, with two used when bird numbers are high;
- (v) in addition to the standard streamer line design, a boom and bridle system is used to position the streamer line over the baited hooks, with a 'jiggler' to add movement and give maximum effect to the streamer lines;
- (vi) noise cannon, used sparingly if birds begin settling on the water, but this needs to be used unpredictably, rather than set to discharge automatically, as birds will habituate to the noise;
- (vii) no stern lighting used when setting at night;
- (viii) Brickle curtain in place during the haul – a proven design consists of a string of net-floats at the surface, positioned around the hauling station with two booms and weights preventing tangling with the longline. This prevents the birds approaching the hauling station across the sea surface (Figure 1).

II.27 The Working Group recommended that France work closely with ad hoc WG-IMAF participants to facilitate further research into the nature of seabird captures and to consider experimental trials. In doing so, the Working Group encouraged France to exchange knowledge, experience and collaborative research with other WG-IMAF participants. The Working Group noted that France might consider easing conservation measures, such as night setting, as an element of focused research on mitigation measures during such trials. While this may increase seabird by-catch in the short term on the vessel conducting the research, this approach could save many thousands of seabirds in the long term, as occurred in the USA (Melvin et. al, 2001; NMFS, 2006) and New Zealand (Robertson et al., 2006).

II.28 French by-catch statistics over the last few years have shown continuing reductions of around 50% each year, except that in the last year, only 13% fewer birds were killed than in the previous year. This indicates that the reductions in seabird by-catch resulting from technical advances may be reaching an asymptote for current mitigation practices, and alternative measures may be warranted to make further significant reductions in by-catch in the French EEZs. In research into the current implementation of technical by-catch reduction devices, consideration is needed of whether further improvements to these devices are likely to result in further by-catch reductions.

II.29 The Working Group recommended that France continue to conduct analyses of the factors that lead to seabird by-catch within its EEZs. The results of such analyses should inform which management strategy will contribute to further significant reductions in seabird by-catch. These analyses could lead to direction of management actions, such as fishing restrictions in SSMUs to avoid highest-risk times and areas and using existing fisheries management instruments (such as those that allow for closure of specific small areas and for the redirection of effort by individual vessels to other areas) in order to reduce seabird by-catch.

II.30 Recognising the complex interplay of factors in fishery management that exist in the French EEZs, the Working Group recommended that France urgently submit a strategic plan to eliminate seabird mortality. The Working Group recommended that the strategic plan include:

- (i) details of the implementation targets for recommended mitigation devices (including, but not limited to, haul mitigation measures, line weighting, night setting, avoidance of all discharge of offal or used baits, and deployment of streamer lines consistent with the CCAMLR specification in Conservation Measure 25-02);
- (ii) establishment of by-catch targets reducing each year to near-zero levels in less than three years;
- (iii) the implementation of additional seasonal and area closures if the targets in (ii) above are not met.

II.31 The Working Group requested that France submit a detailed paper describing the full set of regulatory instruments in place to reduce seabird mortality directly or indirectly, such as move-on rules, restrictions on SSMUs, line weighting, streamer lines, and the triggers or thresholds for their implementation in the French EEZ fisheries so that the Working Group can appreciate the scope and extent of the suite of measures available for use by France to manage incidental mortality.

Seabirds in trawl fisheries

II.32 A total of eight seabird mortalities were reported in trawl fisheries in the Convention Area (Table 10). There were six reported in the icefish fishery in Subarea 48.3 and two in the icefish and toothfish trawl fisheries in Division 58.5.2. In addition, three seabirds were released alive in Subarea 48.3 (Table 11). All observers reported the use of various mitigation measures (with different combinations in each fishery) to reduce seabird mortality, including net cleaning, net bindings during sets, streamer lines and water jets. It was suggested that these mitigation measures had been significant contributors to the decrease in seabird mortality in Subarea 48.3 (Table 12).

Subarea 48.3 icefish

II.33 Data were available from all five trawl cruises conducted within Subarea 48.3 during the 2006/07 season (WG-FSA-07/7 Rev. 1). The Working Group noted that there was 100% observer coverage of fishing vessels in this fishery with 89% of tows observed (Table 12).

II.34 For 2006/07, six seabird mortalities (three black-browed albatrosses, two white-chinned petrels and one grey-headed albatross) were reported in the Subarea 48.3 icefish fishery from five vessels; in addition three birds were released alive, uninjured (Table 11). This compares to 33 seabird mortalities (and 89 released alive) in 2006 and 11 seabird

mortalities (and 14 entanglements) in 2005. The rate of mortality in this subarea in 2007 was 0.07 birds per trawl compared to 0.07, 0.14 and 0.37 in 2006, 2005 and 2004 respectively (Table 12).

II.35 The Working Group noted that there was a substantial drop in seabird by-catch between 2006 and 2007, continuing the general downward trend in seabird mortality in this fishery in recent years (Table 12).

Division 58.5.2 toothfish/icefish

II.36 Data were available from three of the four trawl cruises conducted within Division 58.5.2 during the 2006/07 season; one of the cruises was still at sea at the time the summary was prepared (WG-FSA-07/7 Rev. 1). The Working Group noted that there was 100% observer coverage of fishing vessels in this fishery with 93% of tows observed (Table 12).

II.37 Two seabird mortalities were recorded in the toothfish demersal trawl fishery in Division 58.5.2, both Cape petrels (Table 11). Observer reports from three cruises on board the *Southern Champion* indicated that no bird-scaring devices were deployed but the mitigation measures used were in full compliance with Conservation Measure 25-03.

Krill

II.38 Data were available from all six trawl cruises conducted within Area 48 during the 2006/07 season (WG-FSA-07/7 Rev. 1). In the krill fishery, 17% of vessels fishing in Subarea 48.1, 20% of vessels fishing in Subarea 48.2 and 50% of vessels fishing in Subarea 48.3 had observers on board at some time during their trips. There were no reported incidents of seabird mortality or entanglements in the krill fishery in Area 48, with two cruises in Subarea 48.1 and 48.2, and four cruises in Subarea 48.3 (Table 10).

II.39 The Working Group noted that no seabird mortality was reported on the *Saga Sea* while fishing with continuous trawls in Subareas 48.1 and 48.2. Similarly, no mortalities were recorded on the *Dalmor II* and *Niitaka Maru* using traditional krill pelagic trawl methods in Subarea 48.3 (Table 10).

Seabirds in pot fisheries

II.40 During pot fishing in 2006/07, no seabird mortalities were recorded during the only cruise targeting *D. eleginoides* in Subarea 48.3 (WG-FSA-07/7 Rev. 1).

Marine mammals

Marine mammals in longline fisheries

II.41 Two southern elephant seal mortalities were reported from Subarea 48.3 (WG-FSA-07/6 Rev. 1), while one southern elephant seal mortality was observed in Division 58.5.2. This is an increase from 2005/06, where there were no cases of marine mammal mortality in longline fishing gear (SC-CAMLR-XXV, Annex 5, Appendix D, paragraph 33).

Marine mammals in trawl fisheries

Krill

II.42 No marine mammal mortalities or entanglements were reported in any of the three krill trawl fisheries (Table 13). In 2005/06, one Antarctic fur seal was reported killed in the krill fishery (Table 14).

Finfish

II.43 No marine mammal entanglements were observed in finfish trawl fisheries (Table 13). In 2005/06, one leopard seal was killed in the toothfish trawl fishery (Table 14).

Marine mammals in pot fisheries

II.44 No marine mammal mortalities were reported for pot fisheries in the Convention Area (WG-FSA-07/9). This was also the case for 2005/06 (SC-CAMLR-XXV, Annex 5, Appendix D, paragraph 37).

Information relating to the implementation of Conservation Measures 26-01, 25-02, 25-03

II.45 Information from observer reports relating to the implementation of Conservation Measures 26-01, 25-02 and 25-03 in 2006/07 were provided by the Secretariat (Tables 15 to 17). The data reported exclude fishing activity within the French EEZs in Subarea 58.6 and Division 58.5.1.

Conservation Measure 26-01 ‘General environmental protection during fishing’

Plastic packaging bands

II.46 Conservation Measure 26-01 prohibits the use of plastic packaging bands to secure bait boxes. The use of other plastic packaging bands is restricted to those vessels with on-board incineration facilities and all bands must be cut and disposed of using this facility. Information from observer reports indicated 100% compliance with this measure, the same as in 2006 (WG-FSA-07/8 Rev. 1, Table 1).

Gear debris and garbage

II.47 The Working Group noted the discharge of oil (*Insung No. 1* (Republic of Korea) in Divisions 58.4.1, 58.4.2, 58.4.3a and 58.4.3b; *Ross Star* (Uruguay) in Subareas 88.1 and 88.2), the discharge of gear debris (*Insung Ho* (Republic of Korea) in Subarea 48.3; *Antartic II* (Argentina) in Subareas 88.1 and 88.2) and the discharge of inorganic garbage (*Insung Ho* (Republic of Korea) in Subarea 48.3; *Ross Mar* (South Africa) in Subareas 58.6 and 58.7; *Antartic II* (Argentina) in Subareas 88.1 and 88.2) (WG-FSA-07/8 Rev. 1, Table 1). This included fishing gear, small sections of line, snoods and plastics. The Working Group noted that these discharges would have additional negative effects on seabirds and marine mammals which could not be quantified.

Conservation Measure 25-02 ‘Minimisation of the incidental mortality of seabirds in the course of longline fishing or longline fishing research in the Convention Area’

Line weighting

II.48 For Spanish-system vessels there was 100% reported compliance with the line-weighting regime in all subareas and divisions (Table 16). For autoline vessels, all vessels fishing in Subareas 88.1 and 88.2 and Divisions 58.4.1, 58.4.2, 58.4.3a and 58.4.3b south of 60°S in daylight, met the requirement to achieve a consistent minimum line sink rate as described in Conservation Measure 24-02 (Table 16). As in previous years, this line-weighting requirement has been fully achieved by all vessels. For 2006/07, the Working Group noted that only one vessel (*Antartic II* in Subareas 88.1 and 88.2), using a variation on the autoline method, used clip-on weights to achieve the sink rate requirements. All other autoline vessels were now using IWLs. The Working Group expressed some concern at the low number of bottle tests for some vessels (Table 17), but noted that, with the exception of two vessels, similar sink rates were achieved by all vessels using the Spanish system and also all vessels using IWLs (Table 17). The Working Group noted that the *Shinsei Maru No. 3* again used a trotline system and exceeded the longline sink rate requirements in Subarea 48.6 (Table 17).

Night setting and offal discharge

II.49 There was 100% compliance with night setting, and also for control of offal discharge in all areas where this was required (Subareas 48.3, 48.4, 58.6 and 58.7) (Table 16).

II.50 All but two vessels complied fully with the requirement to retain offal on board in all areas where this was required (Subareas 48.6, 88.1 and 88.2 and Divisions 58.4.1, 58.4.2, 58.4.3a, 58.4.3b and 58.5.2) during the 2006/07 season (Table 16). The *Tronio*, fishing in Divisions 58.4.1 and 58.4.3b, discharged offal on seven occasions due to mechanical problems. The *Ross Mar*, fishing in Subarea 88.1, was observed discarding offal during one haul (WG-FSA-07/8 Rev. 1).

II.51 Vessels fishing in Subareas 48.6, 88.1 and 88.2 and Divisions 58.4.1, 58.4.2, 58.4.3a, 58.4.3b and 58.5.2, may set longlines during daylight hours providing they can demonstrate a consistent minimum line sink rate of 0.3 m s^{-1} , or use an IWL of at least 50 g m^{-1} and achieve a sink rate of 0.2 m s^{-1} . All vessels fishing in these areas complied with one or both of these requirements (Table 17).

Discard of hooks

II.52 Observers reported hooks being present in discards on three of 39 longline cruises; in two of these this was reported as a rare event (WG-FSA-07/8 Rev. 1, Table 1). However, the observer on board the *Insung No. 22*, fishing in Subarea 48.3, reported that there was no system in place for removing hooks from discards and that the discarding of offal with hooks present was a daily occurrence.

II.53 The Working Group expressed concern at the discarding of hooks in offal, given the informal reports that nest surveys had found a high and increasing level of hooks around nests of wandering albatrosses (SC-CAMLR-XXVI/BG/18; paragraph 93).

Streamer lines

II.54 Compliance with streamer line design has increased from 80% (29 of 36 cruises) in 2005/06 to 87% (34 of 39 cruises) this year (Table 16), although this is not as high as the 92% (34 of 37 cruises) in 2002/03. Streamer line design compliance in Subareas 48.4, 48.6, 58.6, 58.7 and Division 58.5.2 was 100%, 90% in Subarea 48.3, 93% in Subareas 58.7, 88.1 and 88.2 and 50% in Divisions 58.4.1, 58.4.2, 58.4.3a and 58.4.3b. Most of the non-compliant vessels had only minor deviations from the requirement (Table 16).

II.55 The cruises where streamer lines did not comply failed on streamer lengths (three cruises: *Jacqueline* in Subarea 48.3; *Insung No. 1* in Divisions 58.4.1, 58.4.2, 58.4.3a and 58.4.3b; and *Viking Sur* in Subareas 88.1 and 88.2), total streamer line length (one cruise: *Antilles Reefer* in Divisions 58.4.1, 58.4.2, 58.4.3a and 58.4.3b) and branched streamer spacing (one cruise: *Shinsei Maru No. 3* in Divisions 58.4.3a and 58.4.3b). One of these vessels, the *Viking Sur*, also failed on two specifications in 2005/06. There was 100% compliance with attachment height.

II.56 The Working Group noted that these small deviations from full compliance with streamer line configuration had not led to any bird mortality. Nevertheless, the Working Group encouraged vessels to strive for full compliance.

Haul-scaring devices

II.57 Paragraph 8 of Conservation Measure 25-02 requires that a device designed to discourage birds from accessing baits during the haul of longlines (haul-scaring devices) shall be employed in those areas defined by CCAMLR as average-to-high or high (level of risk 4 or 5) in terms of risk of seabird by-catch. These areas are currently Subareas 48.3, 58.6 and 58.7 and Divisions 58.5.1 and 58.5.2.

II.58 Apart from one vessel (*Insung No. 22*, 87%) on one cruise in Subarea 48.3 and one vessel (*Ross Mar*, 0%) on two cruises in Subareas 58.6 and 58.7 which did not use haul-scaring devices on all hauls, there was full compliance by all other vessels.

Conservation Measure 25-03 ‘Minimisation of the incidental mortality of seabirds and marine mammals in the course of trawl fishing in the Convention Area’

II.59 A range of mitigation measures were used on board icefish vessels in Subarea 48.3 and Division 58.5.2 and compliance with Conservation Measure 25-03 was generally good (WG-FSA-07/8 Rev. 1; paragraph 32).

Net sonde cables

II.60 There were reports of two vessels, the *Niitaka Maru* and the *Saga Sea*, which used net monitoring cables in the Convention Area during the 2006/07 season (WG-FSA-07/8 Rev. 1). As in 2005/06, the Working Group was unsure whether these were paravane cables or actually net sonde cables (SC-CAMLR-XXV, Annex 5, Appendix D, paragraphs 48 and 121). The Working Group had provided information for the observer logbook to clarify the distinction between these two cables in 2005/06. If these were indeed net sonde cables, the Working Group noted that this was in contravention of Conservation Measure 25-03.

INCIDENTAL MORTALITY OF SEABIRDS AND MARINE MAMMALS IN FISHERIES OUTSIDE THE CONVENTION AREA

II.61 The Working Group discussed the incidental mortality of seabirds outside the Convention Area in respect of the CCAMLR standing request to Members to report on the details and magnitude of seabird mortality for species breeding within the Convention Area, but arising from fisheries conducted outside the Convention Area (SC-CAMLR-XXIV/BG/28, item 3.2). Members, non-Contracting Parties, and international organisations

are also asked to provide information on longline fishing effort in the Southern Ocean outside the Convention Area and on the use and effectiveness of mitigation measures outside the Convention Area.

II.62 The request was carried forward intersessionally through members of ad hoc WG-IMAF. Although no written reports were provided by CCAMLR Members to the group, Mr B. Baker (ACAP) provided a verbal report of documented high levels of seabird mortality in the waters of Angola, Namibia and South Africa, based on a report recently presented to ACAP (Petersen et al., 2007).

II.63 This report documented that the Benguela Current provides rich foraging for sub-Antarctic seabirds from the Convention Area as well as a number of endemic seabird species. Interactions with longline fishing have been identified as the primary cause of seabird population declines in this area. This study represents the first attempt at quantifying seabird by-catch in the Benguela Current Large Marine Ecosystem. By-catch rates for South African fisheries were 0.2 and 0.04 birds/thousand hooks in the pelagic and demersal longline fishery respectively, totalling an average of 500 seabirds killed per year. Namibian longline fisheries were estimated to kill approximately 0.07 birds/thousand hooks in the pelagic longline fishery and 0.3 birds/thousand hooks in the demersal longline fishery. Together, Namibian longline fisheries are likely to kill approximately 30 850 seabirds per year. Limited data exist for Angolan pelagic longline and artisanal line fisheries, both of which overlap with vulnerable seabird populations. Estimates for the entire region were based on pelagic longline effort from ICCAT which averaged 34.5 million hooks per year. This fishery is likely to be killing approximately 2 900 seabirds per year. Thus a total of 33 850 seabirds are estimated to be killed per year by longline fisheries operating throughout the region.

II.64 This study concluded that five species of seabirds are caught in these fisheries at levels that raise concerns about the sustainability of these populations. Overall impacts by these fisheries on seabirds are estimated to kill >31 903 white-chinned petrels; this species is also being recorded caught as directed catch of the artisanal line fishery for consumption. White-chinned petrels are listed as vulnerable and breed throughout the sub-Antarctic, dispersing widely during the non-breeding season. As a result, they are killed by many fisheries throughout their range and unless such mortality is greatly reduced, their ongoing population decreases are inevitable. More than 1 334 albatrosses are also estimated to be killed each year in these fisheries, most commonly the white-capped albatross (>899 p.a.), a species that only occasionally forages in the Convention Area. For Convention Area species, more than 203 Atlantic yellow-nosed albatrosses, and more than 58 black-browed albatrosses were estimated to be killed each year in this region. Both these species are endangered and undergoing population declines.

II.65 These levels of mortality of Convention Area seabirds in southern African waters were noted with great concern by the Working Group, especially when coupled with the levels of mortality reported to the group in 2006 for the South African deep-water hake trawl fishery. In this fishery, approximately 18 000 (95% CI 8 000–31 000) birds were estimated to be killed annually, including ca. 5 000 (95% CI 3 000–12 500) black-browed albatrosses thought to predominantly be from the population breeding at South Georgia (SC-CAMLR-XXV, Appendix D, paragraph 68).

II.66 Given that considerably greater levels of mortality of Convention Area seabirds occur in areas north of the Convention Area, compared to levels within the Convention Area, the

Working Group reminded Members of the importance of the request to report on seabird mortality for Convention Area species arising from fisheries conducted outside the Convention Area (Resolution 22/XXV, paragraph 3; SC-CAMLR-XXV, Appendix D, Table 20, item 3.2).

INCIDENTAL MORTALITY OF SEABIRDS DURING UNREGULATED LONGLINE FISHING IN THE CONVENTION AREA

II.67 As no information is available on rates of incidental mortality of seabirds from the unregulated fishery, estimation of the incidental mortality of seabirds during IUU fishing within the Convention Area presents a number of difficulties, requiring various assumptions to be made.

II.68 In previous years, the Working Group has prepared estimates using both the average catch rate for all cruises from the appropriate period of the regulated fishery in a particular area and the highest catch rate for any cruise in the regulated fishery for that period. Justification for using the worst catch rate from the regulated fishery is that unregulated vessels accept no obligation to use any of the mitigation measures prescribed in CCAMLR conservation measures. Therefore catch rates, on average, are likely to be considerably higher than in the regulated fishery.

II.69 As no information is available on rates of incidental mortality of seabirds from the unregulated fishery, estimates have been made by bootstrapping the observed catch rates from fishing operations in 1996/97. In 1996/97, the fleet implemented relatively few mitigation measures and has been considered to provide the best estimate the Working Group has of likely catch rates in the unregulated fishery. The method used to prepare estimates of the incidental mortality of seabirds during IUU fishing within the Convention Area is described in full in SC-CAMLR-XXV/BG/27 and in SC-CAMLR-XXII, Annex 5, paragraphs 6.112 to 6.117.

II.70 The Working Group agreed that the following values should be applied to the toothfish removals data to estimate seabird by-catch in IUU *Dissostichus* spp. fisheries in the Convention Area in 2006/07 (SCIC-07/10), and also agreed that these values should be used to generate similar estimates for previous years. The resulting median and 95% confidence intervals for seabird incidental mortality rates (birds/thousand hooks) for the unregulated fishery are shown below. It should be noted that where incidental mortality rates are not available for a regulated fishery within a statistical area, the rate for an adjacent area of similar level of risk (SC-CAMLR-XXV/BG/26) has been used.

Subarea/division	Season	Lower 95%	Median	Upper 95%
48.3	Summer	0.39	0.741	11.641
	Winter	0	0	0.99
58.6, 58.7, 58.5.1, 58.5.2	Summer	0.45	0.55	1.45
	Winter	0.01	0.01	0.07
58.4.2, 58.4.3, 58.4.4	Summer	0.27	0.33	0.87
	Winter	0.006	0.006	0.042
88.1, 88.2	Summer	0.27	0.33	0.87
	Winter	Not applicable, access not possible in winter		

II.71 The estimates of potential unregulated seabird by-catch in the Convention Area in 2004/05 and comparison with estimates for previous years are provided in detail in SC-CAMLR-XXVI/BG/32.

II.72 The overall estimated total for the whole Convention Area in 2006/07 indicates a potential incidental mortality of seabirds in the unregulated fishery of 8 212 (95% CI 6 730–21 926) seabirds. The values for this and previous years are summarised in respect of different parts of the Convention Area in Table 18.

II.73 In comparison with estimates for previous years, calculated in identical fashion, the value for 2006/07 is broadly similar to the values estimated for the last three years. These are the lowest reported values since estimates started in 1996 (see SC-CAMLR-XXVI/BG/32, Table 2). This presumably reflects a commensurate reduction in toothfish removals or changes in the areas from where IUU fishing occurs.

II.74 Based on the data since 1996 (SC-CAMLR-XXIV/BG/27), an estimated total of 193 927 (95% CI 157 917–565 245) seabirds have been killed by these vessels. Of these:

- (i) 43 396 (95% CI 35 127–136 275) were albatrosses, including individuals of four species listed as globally threatened using the IUCN threat classification criteria;
- (ii) 7 687 (95% CI 6 280–21 474) were giant petrels, including one globally threatened species;
- (iii) 121 651 (95% CI 99 213–347 589) were white-chinned petrels, a globally threatened species.

II.75 The Working Group also noted that grey petrels, another globally threatened species, have comprised between 5% and 16% of the catch in the regulated fishery in Division 58.5.1 over the last three years, and that some of the estimated 1 184 to 3 858 birds taken in the IUU fishery this year may have been of this species. The Working Group undertook to examine methods of estimating the by-catch of this species by IUU vessels within Division 58.5.1 as an intersessional task with a view to assessing the level of take of grey petrels in future years.

II.76 As in previous years, it was emphasised that these values are very rough estimates (with potentially large errors). The present estimates should only be taken as indicative of the potential levels of seabird mortality occurring in the Convention Area due to unregulated fishing and should be treated with caution.

II.77 In particular, changes in gear type now seen in the regulated fishery, such as the increased use of IWL autoline gear, trotlines and the trotline/net system, would have undoubtedly flowed through to IUU vessels. These gear changes, together with the use of gillnets by IUU vessels, will affect the levels of IUU-fisheries-related by-catch, but are not reflected in the assumptions used to develop these estimates.

II.78 The Working Group discussed how this might be taken into account, however, in the absence of a clear understanding of how these influences affect by-catch rates, the Working Group was reluctant to depart from the established methodology for preparing these IUU seabird by-catch estimates.

II.79 Nevertheless, even taking these methodological issues into account, the Working Group endorsed its conclusions of recent years that:

- (i) the levels of loss of seabirds from the populations of these species and species groups are still broadly consistent with such data as exist on the population trends of these taxa, including deterioration in conservation status as measured through the IUCN criteria;
- (ii) although considerably reduced from previous years, such levels of mortality probably still continue to be unsustainable for some of the populations of albatrosses and petrels breeding in the Convention Area.

II.80 Because many albatross and petrel species are facing potential extinction as a result of fisheries-related mortality, the Working Group again requested the Commission to continue to take action to prevent further incidental mortality of seabirds by unregulated vessels in the forthcoming fishing season.

RESEARCH INTO AND EXPERIENCE WITH MITIGATION MEASURES

Longlines

Trotline variation of the Spanish longline system and the Chilean trotline/net system

II.81 The Working Group reviewed three papers (WG-FSA-07/11, 07/14 and 07/23) that report the performance of an increasingly used modification of the Spanish longline system in fisheries outside the Convention Area (Annex 5, Figure 7). This trotline longline system retains the floating line of the Spanish longline system, but replaces the horizontal hookline with a series of 15 to 20 m vertical hooklines, each individually weighted with 4 to 8.5 kg and spaced at 20–40 m along the floating line. Clusters of 8–10 hooks are placed within a metre of the weight. During line setting, this modified system sinks quickly ($0.8\text{--}1.4\text{ m s}^{-1}$) beyond the range of foraging seabirds. All three papers report no seabird mortality during line setting or line hauling when using the trotline system.

II.82 A trotline/net longline system has been developed in Chile. It is now in extensive use in Chile and throughout southern South America. Although at least one vessel has used the trotline system in the Convention Area (*Shinsei Maru No. 3*), the trotline/net system has not as yet been used in the Convention Area. The adoption of this modified gear is due primarily to the dramatic reduction in sperm whale and killer whale depredation that is realised when used in combination with cone-shaped nets (sleeves) on each of the vertical hooklines. The nets float above the hooks while fishing but encase captured fish in heavy netting as the gear is hauled. This new trotline/net longline system eliminated seabird by-catch and significantly reduced whale depredation with no loss in toothfish CPUE when compared to the Spanish longline system.

II.83 The Working Group noted that by virtue of the rapid sink rates of hooklines, this modified longline system poses significantly reduced risks to seabirds during both hauling and setting compared to the traditional double-line system. However, the Working Group

recommended that this system should comply with all requirements of Conservation Measure 25-02, including line-weighting requirements, to protect seabirds. Further, the Working Group noted that use of this gear does not require modification to the sink rate requirement in Conservation Measure 25-02.

II.84 WG-FSA-07/14 reported the development of this gear modification in the Chilean domestic longline fisheries. The novel system was based on the Chilean artisanal longline fishing method. Based on the benefits to seabirds, this method was tested in the industrial longline fishery in 2005 and was adopted by all 11 vessels in the Chilean toothfish fleet in the 2005/06 season. It then quickly spread to other South American fleets. No seabirds were caught in 2005/06, with or without streamer lines, day or night, in areas with a high abundance of black-browed albatross. TDR-measure sink rates of 4–12 kg weighted vertical hooklines averaged 0.8 m s^{-1} . Toothfish depredation was reduced to $<0.5\%$ in 2005/06 from over 3% in 2001/02; toothfish CPUE was comparable to the double-line system in previous years. The Working Group noted that the development of this method evolved from the NPOA process initiated by Chile under the leadership of Prof. C. Moreno, and that this collaborative process instigated innovation in the Chilean fishery, which is now spreading quickly to other southern hemisphere fisheries. The Working Group noted that incentives are critical to successful adoption of by-catch mitigation technologies and practices.

II.85 WG-FSA-07/23 reported on comparisons of sperm whale depredation on toothfish using the trotline/net system and the traditional double-line system in the Uruguayan fleet operating at the edge of the Patagonian Shelf. This paper was not available in English; cursory review was based on the abstract and some tables. Sink rates of 1.14 m s^{-1} were recorded for weightings of 8–8.5 kg per vertical hookline using the 10 m bottle-line test. Despite the presence of black-browed albatrosses and Cape petrels, no seabird mortality was observed using the trotline/net system in combination with streamer lines. Seabird by-catch in the traditional system was not reported in the abstract. Sperm whale depredation occurred in 71% of sets using the traditional system versus 27% in the new system. The Working Group welcomed the report from the Uruguayan fleet, but the lack of an English translation limited its ability to evaluate findings.

II.86 WG-FSA-07/11 reported a comparison of fish catch rates between two locations in the South Atlantic region of South America by Ukrainian vessels using the trotline variation of the double-longline system. Gear weighting was 4–6 kg per vertical hookline – sink rate data were not reported. No seabird mortalities were recorded in over 900 000 hooks set. The use of the trotline/net system described in WG-FSA-07/14 successfully reduced sperm whale depredation on toothfish.

II.87 The Working Group welcomed these reports on the trotline/net system and encouraged future reports of the performance of the system, especially those that include details on seabird by-catch, abundance and interactions, weighting scenarios and sink rates, as well as toothfish and fish by-catch CPUE.

II.88 WG-FSA-07/31 reported plans to conduct a trial inside the Convention Area to compare the effectiveness of the trotline/net system with the traditional Spanish system in reducing fish loss to toothed whales. The proposed trial, which will be conducted on a single vessel, follows preliminary testing in the 2006/07 season and is scheduled to occur in Subarea 48.3 in the 2007/08 season. Trotline/net longlines will be configured as described in paragraph 81. Gear configuration will be alternated nightly with the traditional Spanish

longline gear. Trials will assess the impact of the modified gear on cetacean, seabird, toothfish, fish by-catch and the benthos, compared to standard (traditional) gear. All the provisions of Conservation Measures 24-02 and 25-02 will be applied during the trial and a three-bird by-catch limit is proposed. If the limit is reached, the vessel will revert to standard Spanish longline gear. It is intended that once shore-based scientists are satisfied that enough information has been acquired on the trotline/net system, that vessels will be given the option of continuing to fish with either gear configuration.

II.89 The Working Group recognised the importance of the proposed trial for vessels operating in the Convention Area. The trial will add further information on the performance of the modified gear to that already acquired by vessels outside the Convention Area (see WG-FSA papers cited above). The Working Group also recognised the difficulty in acquiring statistically robust data on the effects of gear modifications on fish stocks, fish by-catch species and other aspects of the marine environment. With this in mind, the Working Group strongly encouraged expanding the trial in 2007/08 to include as many Spanish longline vessels operating in Subarea 48.3 as possible. This approach would increase the data acquisition rate on the trotline/net method and enable CCAMLR to quickly understand the comparative effects of the two gear types on fish stock, fish by-catch and other aspects of the marine environment.

Steel weights on Spanish longline system and trotlines

II.90 WG-FSA-07/15 reported the results of a designed experiment (on a chartered vessel) that examined the sink rate relationships between traditional Spanish system weights (netting bags of rocks) and elliptical, or torpedo-shaped, steel weights. The purpose of the research was to provide vessel operators with the option of using either weight type while still complying with the sink rates specified in Conservation Measure 25-02. Sink rates of both traditional Spanish system gear and trotline/net gear were examined in the experiment. Traditional method longlines with 8 kg weights 40 m apart (closely approximates the 8.5 kg/40 m requirements in Conservation Measure 25-02) averaged 0.24 m s^{-1} to 2 m depth, which would be equalled or exceeded on average by lines with 5 kg steel weights attached. Sink rates of trotline/net longlines greatly exceeded those of the traditional method, ranging from 0.68 m s^{-1} (4 kg rocks) to 1.41 m s^{-1} (8 kg steel) in the shallow depth ranges. There are both actual and potential benefits to the use of steel weights. Actual benefits include: (i) steel weights maintain their mass throughout the season and require no maintenance, unlike weights made from bags of rocks, which lose rocks with use and require ongoing maintenance; (ii) vessels using steel weights are more likely to remain compliant to the line-weighting requirements of the conservation measure; (iii) steel weights require about one-third the storage space on vessels; and (iv) the total amount of weight hauled by vessels is considerably reduced. The main potential benefit of steel weights is that due to their small size and streamlined shape, the frequency of snagging on the seabed would very likely be reduced. This would result in a reduction in the amount of lost gear, the incidence of ghost fishing (capture of fish that are never landed) and in benthic pollution.

II.91 The Working Group endorsed the use of solid steel (e.g. not chain links) weights and recommended that Conservation Measure 25-02 be modified to provide Spanish longline system vessel operators the option of using either traditional weights under the current two mass/spacing regimes or steel weights under a mass/spacing regime of $\geq 5 \text{ kg}$ mass spaced at

intervals of no more than 40 m. The Working Group noted that operators should consider the shape of weights and recognise that torpedo-shaped or spherical weights are the most hydrodynamic.

Hook retention

II.92 WG-FSA-07/20 reported the increased incidence in 2006/07 of demersal fish hooks ingested by South Georgia wandering albatrosses based on observations at breeding colonies and the need to take steps to reduce this cryptic source of seabird injury and mortality. The increase in the occurrence of ingested hooks and its potential contribution to the global decline of wandering albatrosses, and as yet unexplained body piercing by hooks was reported by British Antarctic Survey scientists (SC-CAMLR-XXVI/BG/18), who intend to submit a scientific paper to ad hoc WG-IMAF in 2008.

II.93 The Working Group expressed concern at the reports that nest surveys had found a high and increasing level of hooks around nests of wandering albatrosses and embedded in wandering albatrosses. In addition to the discards referred to in paragraph 52 from within the Convention Area, anecdotal evidence suggests the increase in hook ingestion is associated with the use of the trotline/net method, where non-target species (e.g. grenadiers) may be cut off with embedded hooks. Grenadiers are primarily consumed whole by royal and wandering albatrosses as they are the only birds large enough to take fish of that size. The only currently plausible explanation for body piercing by hooks is that seabirds are caught during longline hauling and snoods break off, or seabirds are landed and set free without hooks being removed. The Working Group strongly encouraged the UK to present a paper to ad hoc WG-IMAF on its survey work and, in particular, hook ingestion and hook body piercing, to its 2008 meeting.

II.94 In recognition of the severity of the problem and its assessment by the UK (SC-CAMLR-XXVI/BG/18), the Working Group strongly supported the proposal that CCAMLR produce a poster instructing crews to remove hooks from all landed fish and hauled baits. A draft version of the poster was presented to the Working Group, and was endorsed. The proposed poster incorporates photographs of fish and baits containing hooks, a photograph of a hook embedded in the mouth of a wandering albatross and appropriate text. The estimated cost of the production of such posters is AU\$5 000.

II.95 The Working Group recommended that:

- (i) CCAMLR produce the A3 poster in colour, in all CCAMLR languages, as well as Indonesian, Korean and Japanese. It should be waterproof and on plastic for display in wet areas on vessels;
- (ii) the Secretariat distribute the poster via technical coordinators to all longline vessels operating in the Convention Area early in the 2007/08 season as a priority;
- (iii) the Secretariat via technical coordinators instruct vessel operators to display a poster in at least four strategic locations on vessels, including in fish processing factories, in line hauling bays in easy view of crews hauling gear, and in areas inboard of hauling areas where crews process hauled baits/hooks;

- (iv) scientific observers be instructed to report on whether the poster is displayed on vessels and reminded of the need to monitor hook removal.

II.96 The Working Group also strongly encouraged Members operating the Spanish method of longlining (both traditional and trotline methods) outside the Convention Area to adopt the use of the poster and provide them to their longline vessels for on-board display.

Integrated weight longlines

II.97 WG-FSA-07/51 presented a comparison of skate by-catch using 50 g m⁻¹ IWLs and UWLs in the Bering Sea fishery for Pacific cod (*Gadus macrocephalus*) using data from WG-FSA-06/52 (SC-CAMLR-XXV, Annex 5, Appendix D, paragraphs 98 to 102), which described the results of research comparing seabird by-catch and fish catch and by-catch of 50 g m⁻¹ IWLs to UWLs both with and without paired streamer lines. The skate by-catch rate (six species) was significantly less (11%) on IWLs than traditional UWLs. The authors note limitations of the analysis: skate by-catch rates could vary by species, demographics, bottom type, depth, region and other factors. This contradicts the preliminary information provided about the trials from Subarea 48.3 in the Convention Area (WG-FSA-07/30). The Working Group noted the importance of evaluating the effect of seabird mitigation technologies on the catch rates of all taxa.

II.98 WG-FSA-07/13 reported the results of a trial to determine the effect on gear sink rates of setting IWLs through a line setter (Mustad Company, Norway). A line setter consists of opposing metal and rubber sheaves through which the longline is pulled at a speed slightly faster than the forward speed of the vessel. Longlines set with a line setter enter the water slack (without tension astern) and with a vertical profile about 0.5 m astern, whereas lines set without a line setter are under tension astern and enter the water several metres astern. The objective of the research was to determine if line setters currently used in the Kerguelen and Crozet *D. eleginoides* fisheries are likely to result in faster sink rates, and therefore, reduced interactions with seabirds. Sink rates were measured with time-depth recorders using a paired experimental approach (both treatments in same sets; alternate magazines with and without the setter). The sink times of lines set with and without the line setter were statistically indistinguishable: longlines reach 2 m depth in 7.9 ± 0.8 (s.e.) and 7.4 ± 0.8 seconds with and without the setter respectively. The results reveal that line setters do not significantly increase the sink rate of IWLs and that their use is unlikely to result in reduced interactions with seabirds in the Kerguelen and Crozet fisheries.

Sink rates

II.99 The Working Group reviewed the sink rate data from 2006/07 (Table 17) for both Spanish gear and autoline vessels to examine sink rates achieved in Convention Area fisheries. All sink rate data were generated using the 10 m bottle line test.

II.100 All but one vessel reported as using autoline used IWLs. The *Shinsei Maru No. 3* fishing in Subarea 48.6 and Divisions 58.4.3a and 58.4.3b was categorised as an autoline

vessel as it uses a single topline. However, this vessel utilises the trotline system and achieved an average sink rate of 0.68 m s^{-1} , almost double that of the average sink rate recorded from autoline vessels using IWL.

II.101 The review of sink rate data in 2006 suggested that additional data would be useful to interpret anomalously high sink rates especially with Spanish longline gear. The Working Group then suggested simple additions to the logbook to indicate the placement of the bottle-test attachment on the line relative to added weights, how gear is set relative to the direction of the propeller, and to record if weight spacing during a bottle line test matches the spacing used typically during fishing (SC-CAMLR-XXV, Annex 5, Appendix D, paragraph 118).

II.102 These additions were incorporated in the observer logbook and cruise report for the 2006/07 season, and the Working Group noted that the level of precision (a decrease in variation around the mean) in recorded sink rates had improved markedly since 2006 (Table 17).

Longline bait

II.103 WG-FSA-07/18 reported that preliminary testing of potential seabird deterrents in longline fisheries around the Kerguelen Islands showed white-chinned petrel responses to mackerel (*Scomber scombrus*) baits differed depending on whether baits were treated with capsaicin and piperine, or were left untreated. Results are preliminary; however, differences in petrel behaviour towards treated baits suggest this method warrants further investigation, including examining effects on fish.

Haul-scaring devices

II.104 The only Convention Area incidental mortalities of seabirds due to interactions with fishing gear during the haul were observed in Subarea 58.6 and Division 58.5.1 within the French EEZ (Table 3).

II.105 In Subarea 58.6 and Division 58.5.1 within the French EEZ, 253 seabirds were reported caught on the haul. In Subarea 58.6, 79 seabirds were caught uninjured and released alive, while nine were reported caught injured and released alive. In Division 58.5.1, 133 seabirds were caught uninjured and released alive, while 32 were caught injured and released alive. The catch rates (birds/thousand hooks) for Subarea 58.6 and Division 58.5.1 were 0.07 and 0.08 respectively.

II.106 In the rest of the Convention Area, seven birds were observed caught but uninjured. The catch rates (birds/thousand hooks) for Subareas 48.3 and 48.4, and the South Africa EEZ areas (Subareas 58.6 and 58.7) were 0.001, 0 and 0.005 respectively. The Working Group noted the decrease in catch rates from last season which were (birds/thousand hooks): Subarea 48.3 (0.003), Subarea 48.4 (0.005) and the South Africa EEZ (Subareas 58.6 and 58.7) (0.015). The Working Group noted that this was an improvement on the 2005/06 season when 32 seabirds were observed caught and uninjured during the haul.

II.107 Various mitigation devices were reported used during the haul for 14 vessels (13 vessels did not report the use of haul mitigation measures) (WG-FSA-07/6 Rev. 1). These included:

- (i) the use of a water cannon/fire hose on four vessels. This was observed to be effective at close range when birds made their way close to the hauling point;
- (ii) a single boom with a single attached object/streamer was reportedly used on two vessels;
- (iii) a single boom with multiple attached objects/streamers was reported on three vessels;
- (iv) a 'Brickle curtain' (multiple booms with attached objects) was used on five vessels (e.g. Figure 1);
- (v) two vessels used loud noise as a deterrent when seabirds entered through the boom scaring devices.

II.108 The Working Group noted that the current level of haul by-catch remains a concern, and further efforts need to be made to develop and refine effective mitigation at the hauling station (paragraphs 104 to 107). The Working Group again encouraged technical coordinators to instruct observers to collect detailed information on haul mitigation devices used in the Convention Area to allow the effectiveness of these devices to be assessed, and to provide guidance on the uniform adoption of haul mitigation techniques.

II.109 The Working Group made a request to France to work with its technical coordinator to provide information to observers to encourage the use of, and record the detail of, haul mitigation measures (paragraph 25).

Paired streamer lines

II.110 During discussions about the use of single versus twin streamer lines in the Southern Ocean, Mr I. Hay (Australia) noted that twin streamer lines, which complied with the CCAMLR-prescribed standard, had been used in the Division 58.5.2 longline fishery since part-way through the first season (2002/03). In addition, a boom and bridle system is used whilst setting to adjust the position of the streamer line to maximise aerial coverage over the main fishing line; this is particularly beneficial during periods of crosswinds. No research has been done in this fishery to evaluate the effectiveness of one versus two streamer lines, however, advice from the vessel is that two streamer lines are more effective at times of high bird abundance.

Trawl

Offal management

II.111 WG-FSA-07/42 reported on two trials conducted in New Zealand to determine the effects of mealing, mincing and batching all offal before discharge on seabird abundance around trawlers. To follow current regulations, both trials were conducted with paired streamer lines in place. The first trial occurred on a midwater trawler targeting hoki (*Macruronus novaezelandiae*). Three offal treatments were considered: mincing all offal, discharging unprocessed offal, and mealing all offal and so reducing discharge to sump water. The second vessel was bottom-trawling for squid (*Nototodarus sloanii*). Because there was no meal plant on board, the intention was to replace mealing with a batching treatment, where offal was held and discharged in batches. The response variable was estimated seabird abundance (in species and activity categories) within a defined zone at the vessel stern.

II.112 The results of the first trial show that mincing reduced the numbers of large albatrosses (*Diomedea* spp.) feeding around the vessel, but had no significant effect on other groups of seabirds. In contrast, mealing all waste reduced the abundance of several of the bird groups. In particular, the abundance of small albatrosses (principally *Thalassarche* spp.) within the sample area was reduced to 5% of the number that were there when unprocessed waste was discharged. On-board operational problems constrained the implementation and drawing of conclusions from the second trial. However, preliminary analyses suggest a reduction in the numbers of all albatross within the sampling area.

II.113 While the trials reported here were preliminary, WG-FSA-07/42 concluded that there was not currently sufficient evidence to support mincing as an effective waste management measure for reducing seabird interactions, especially given the current cost of the hardware involved. The Working Group questioned aspects of experimental design in the trials including comparisons of waste treatment alternatives and discharges from different locations on the vessel, and suggested that these may have confounded the results.

II.114 The Working Group discussed offal retention and discharge options on both longline and trawl vessels, while recognising the operational constraints in some older and smaller vessels operating in the Convention Area.

II.115 The Working Group noted that potential options for discharge management, such as underwater discharge and maceration, had not been tested to their full potential either inside or outside the Convention Area.

Net binding

II.116 The Working Group recalled reports of the effective use of net binding to reduce seabird interactions with trawl nets in the *Champscephalus gunnari* fishery in Subarea 48.3 (SC-CAMLR-XXIV, Annex 5, Appendix O, paragraph 207; SC-CAMLR-XXV, Annex 5, Appendix D, paragraph 58; 2004/05 and 2005/06 cruise reports). While the data are not statistically significant, three seasons of operational experience (2004/05–2006/07) indicate that binding the net is a highly effective and easily accomplished mitigation measure. There is increasing evidence from observer reports and anecdotal information from fishing

companies and technical coordinators (Mr Heineken and Dr D. Agnew (UK)) that in combination with net cleaning, net binding may be responsible for reductions in seabird mortality during setting operations.

II.117 In 2006, the Working Group recommended that to assess the utility and provide guidelines for the uniform uptake of net binding in pelagic trawl fisheries in the Convention Area, pelagic trawl fisheries operating outside Subarea 48.3 also use net binding (SC-CAMLR-XXV, paragraph 5.18). The Working Group reiterated this recommendation to provide better information about the use of net binding in pelagic finfish trawl fisheries.

OBSERVER REPORTS AND DATA COLLECTION

II.118 The Scientific Committee requested that the Secretariat undertake a review of observer education and training (SC-CAMLR-XXV, paragraph 2.11), and this proposal was endorsed by the Commission (CCAMLR-XXV, paragraph 10.8). In order to fulfil this request, the Secretariat contacted Members and requested that they submit information on their procedures to educate and train their observers, together with any training manuals or educational material that they utilise. An overview of the information collected from Members is provided in Appendix 1 of SC-CAMLR-XXVI/BG/9 Rev. 1. It identifies nine main aspects of training and education considered important for scientific observers. The standard training components provided by the respondents are summarised in Appendix 2 of SC-CAMLR-XXVI/BG/9 Rev. 1.

II.119 The Working Group noted that there were several differences in the approach by Members to the education and training of their observers for CCAMLR-specific competencies. It was also noted that this could result in different standards of observer competencies, and that observer data quality could be improved by implementing a range of measures. The Working Group supported the proposal of the Secretariat that Members:

- (i) develop a standard set of training and educational standards to augment current domestic training programs;
- (ii) consider the feasibility of developing a process whereby national observer programs are accredited to consistent international standards;
- (iii) encourage and support national technical coordinators to attend WG-FSA and ad hoc WG-IMAF meetings and consider maximising such opportunities by convening training workshops for coordinators.

Observer data collection

Trawl

II.120 In order to assess seabird mortality reporting during trawl hauls, the Working Group augmented data collection protocols to include reporting of the extent to which the haul was monitored and to record seabirds found on warp cables (SC-CAMLR-XXV, Annex 5, Appendix D, paragraph 124). In 2006/07 Convention Area trawl fisheries, only one net haul

observation was reported. The Working Group strongly encouraged that these data be recorded in all Convention Area trawl fisheries for trawls regardless of the extent to which seabird mortality is observed.

Progress of a trawl warp cable data collection protocol for inside the Convention Area

II.121 In response to reports of seabird mortality of Convention Area seabirds in trawl fisheries in New Zealand and South Africa and seabird mortalities reported in the *C. gunnari* trawl fishery in Subarea 48.3 in 2006 and past years, the Working Group developed warp-strike forms and a protocol, and recommended that they be implemented in all trawl fisheries in the Convention Area (SC-CAMLR-XXV, Annex 5, Appendix D, paragraphs 72 to 75). The objective was to assess the extent of seabird interactions with trawl warp cables in Convention Area fisheries. If detected, the Working Group would then examine the nature and extent of seabird mortalities, including the vessel type, seabird species concerned and operational factors of the fishery that may contribute to these interactions and examine mitigation options to reduce mortality of seabirds in these fisheries. The trawl warp-strike protocol was implemented in 2006/07 with the expectation that sampling would take place across a high proportion of vessels and fisheries.

II.122 The Working Group evaluated data collected on seabird warp strikes in Convention Area trawl fisheries in 2006/07. Warp-strike data were collected in 61 of 102 icefish trawls in Subarea 48.3. In all cases, seabirds were present during observations and ranged in number from <50 to >100 birds per observation. No warp strikes were recorded. Factory discharge information was collected inconsistently; however, four instances of factory discharge were recorded. Warp-strike data in accordance with the electronic trawl logbook form T11 protocol were not collected in the trawl fisheries for toothfish and icefish in Division 58.5.2 or in krill trawl fisheries in the Convention Area.

II.123 Noting that warp-strike data were collected in over 50% of the trawls in Subarea 48.3 in the inaugural year of the warp-strike protocol, the Working Group complimented the efforts made by observers and technical coordinators to implement this protocol. The data suggest that, unlike trawl fisheries outside the Convention Area, warp strikes pose minimal risk to seabirds in the Subarea 48.3 icefish trawl fishery. The Working Group encouraged more diligent collection of discharge data to more fully evaluate the relationship between warp strikes and discharge in this fishery. Some confusion may have arisen over the need to collect discharge data in the absence of seabird mortalities and the Working Group suggested that technical coordinators strongly encourage observers to record these data for all warp-strike observations.

II.124 The Working Group reviewed the warp-strike data collection protocol and associated data collection forms and was satisfied with both.

II.125 The Working Group strongly encouraged the full implementation of the warp-strike protocol in all Convention Area trawl fisheries in 2007/08.

General

II.126 The Working Group noted that the quality of observer data which had been submitted continued to improve and thanked technical coordinators and observers for their efforts in the last year. However, the Working Group noted that improvements could still be made in the reporting of observer data (paragraphs 18, 48, 60, 120 and 123) and encouraged technical coordinators and observers to continue to fully implement the specifications of the various observer protocols and report all required data.

RESEARCH INTO THE STATUS AND DISTRIBUTION OF SEABIRDS

II.127 The Working Group noted that ACAP addresses all Procellariiform seabirds occurring in the Convention Area. A report from ACAP (WG-FSA-07/26) documented the major outcomes achieved at the Third Meeting of the ACAP Advisory Committee meeting held in Valdivia, Chile, in June 2007. At that meeting, the Committee noted ACAP Parties' obligations under the Agreement to achieve and maintain a favourable conservation status for albatrosses and petrels. In order to measure progress in achieving this objective, the Committee supported the recommendation of its Status and Trends Working Group that Species Assessments be produced for all 26 species listed under the Agreement. These assessments will include information on population status and trends, as well as foraging distribution and interactions with fisheries operating in RFMOs and EEZs.

II.128 The Species Assessments will be web-based and housed on the ACAP website, and thereby readily available for consideration by CCAMLR Members. It is anticipated that the Species Assessments will be largely completed by the Fourth Meeting of the ACAP Advisory Committee scheduled for August 2008. The Working Group was encouraged by the progress of the Species Assessments and, given their comprehensive coverage of Convention Area seabirds at risk from fisheries-related mortality, agreed that they will be very useful for ad hoc WG-IMAF's work.

II.129 WG-FSA-07/26 also documented that the ACAP Breeding Sites Working Group (BSWG) had made progress against all items listed in its work program. There was agreement for a need for further consideration of how to define threats and threat levels at breeding sites, and of public access to data from the breeding sites database. The BSWG has been requested by the Advisory Committee to reconsider the definition of threats with a view to seeing if the IUCN criteria, that are already widely accepted, were suitable.

II.130 Mr Marteau discussed SC-CAMLR-XXVI/BG/22 which presented a synthesis of the results of research on the evaluation of the impact of fisheries on the populations of white-chinned and grey petrels of the Crozet and Kerguelen Islands, undertaken between 2004 and 2006 (Subarea 58.6 and Division 58.5.1 respectively). Research included mark-recapture studies, estimation of breeding success, adult survival and population estimation. These data, and fishery and environmental data were modelled to examine responses of the populations to a range of factors. The Working Group applauded France for its efforts in this area, and looked forward to reviewing the publication that presents these analyses in detail in 2008.

II.131 Mr Marteau indicated that a foraging distribution research program directed by Dr H. Weimerskirch at the Centre National de la Recherche Scientifique in Chizé, France, has

begun. The objective of this program is to examine the pelagic distribution of seabirds breeding in the French Antarctic and sub-Antarctic areas, using both satellite and geolocation loggers. This three-year study will provide important information on the distribution of seabirds both inside and beyond the Convention Area.

ASSESSMENT OF RISK IN CCAMLR SUBAREAS AND DIVISIONS

II.132 As in previous years, the Working Group assessed the numerous proposals for new and exploratory fisheries and the potential for these fisheries to lead to substantial increases in seabird incidental mortality (paragraphs 155 to 164).

II.133 In order to address these concerns, the Working Group reviewed its assessments for relevant subareas and divisions of the Convention Area in relation to the:

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

II.134 Comprehensive assessments on the potential risk of interaction between seabirds and fisheries for all statistical areas in the Convention Area are carried out each year.

II.135 The Working Group noted a paper presented by Dr S. Waugh (New Zealand) on the risk-assessment processes undertaken in CCAMLR fisheries (WG-FSA-07/P2). This paper was prepared as an intersessional task following discussion at ad hoc WG-IMAF in 2006 on the need to make CCAMLR's methodology and approaches more accessible to groups outside CCAMLR seeking to undertake similar processes (SC-CAMLR-XXV, Annex 5, Appendix D, paragraphs 135 to 137). The paper documented the CCAMLR system of applying risk assessment to minimise seabird by-catch. A review of the progress of several RFMOs in addressing seabird by-catch clearly shows that CCAMLR has the most advanced system of management among the RFMOs covered in the review, and has made the most demonstrable progress in reducing seabird by-catch levels in its longline fisheries. The Working Group considered the paper to be potentially useful for other fisheries agreements that are currently developing measures to reduce seabird mortality, including risk assessment methods.

II.136 The Working Group recommended that this paper be widely disseminated, including to other RFMOs, which could consider the experience of CCAMLR when developing approaches to minimising by-catch in their own fisheries. The Secretariat was asked to assist in this.

Trawl risk assessment

II.137 The assessments were originally confined to longline fisheries, but were extended to trawl fisheries this year following a request from the Commission to do so (CCAMLR-XXV, paragraphs 5.21 to 5.24).

II.138 The species particularly at risk of mortality from interactions with longline fisheries were considered to be all Convention Area species of albatross, both species of giant petrel,

white-chinned petrel, grey petrel, short-tailed shearwater and sooty shearwater. For trawl fisheries, the same species were considered to be at risk, together with the Cape petrel (due to the potential for entanglement and warp strike for this species).

II.139 There was no additional information provided this year on the at-sea distribution of seabirds (paragraphs 127 to 131). However, information on the distribution of Cape petrels has been incorporated into the assessment. The revised assessments, incorporating advice in relation to trawl gear, have been combined into a background document for use by the Scientific Committee and Commission (SC-CAMLR-XXVI/BG/31).

II.140 The assessments now incorporate advice on operational measures that should be applied to pelagic trawling operations to minimise by-catch. In developing this advice, the Working Group drew upon the considerable observer data that have been collected across CCAMLR trawl fisheries. This shows that the risks to seabirds are strongly gear-dependent, with pelagic trawling for finfish posing the highest risk.

II.141 Conservation Measure 25-03 sets mandatory practices that include: no net sonde monitor cables; minimising of vessel lighting; no offal discharge during setting and hauling, although full offal retention is also occurring on some vessels; thorough cleaning of the net prior to setting to remove items that might attract birds; and minimising the time during setting and hauling that a net is on the surface with meshes slack. Optional practices that have been used to date include: single streamer lines, Brady bafflers, water jets, net binding, weighting of the net codend and/or wings, and full offal retention.

II.142 The Working Group analysed information on the mitigation measures used by vessels fishing for icefish in Subarea 48.3 from 2004 to 2007. In addition to the mandatory requirements of Conservation Measure 25-03, vessels experimented with a number of other mitigation measures. The lack of a rigorous experimental design, and the fact that vessels have used a combination of different measures in an attempt to reduce their seabird by-catch over this period, meant that none of the effects of mitigation measures on by-catch rates were statistically significant. However, the data did suggest that streamer lines to protect the net were ineffective in mitigating seabird by-catch, confirming reports by observers, and that both cleaning the net and the use of net binding decrease by-catch rates, again confirming previous analyses and observer reports. The results were inconclusive with respect to adding weights to the codend.

II.143 In compiling its advice on best-practice guidelines for seabird by-catch mitigation in finfish pelagic trawl fisheries, the Working Group noted that there are limited data on the individual contributions of different technical practices to achieve mitigation, such as net binding and codend weighting, and that further consideration is needed on other aspects, such as the setting of by-catch limits.

II.144 The Working Group developed a set of best-practice mitigation measures for pelagic finfish trawling gear and recommended that they be applied for all CCAMLR statistical subareas and divisions. These have been incorporated into SC-CAMLR-XXVI/BG/31. A summary of the assessment of risk to seabirds posed by pelagic finfish trawl fisheries and associated mitigation requirements is provided in Table 19.

II.145 The Working Group noted that by-catch in existing finfish fisheries in category 4 and 5 risk areas was minimal despite current conservation measures for fisheries in those

areas not containing all elements of the best-practice guidelines and a different suite of mitigation measures being used in each fishery. The Working Group also noted that those mitigation measures have evolved as a set of several elements rather than having been evaluated for their individual effect. The Working Group did not consider that there was a need for additional mitigation measures beyond those currently in use in those fisheries, provided the current zero or near-zero by-catch levels are continued or decreased respectively. It was further noted that there were very low levels of seabird by-catch in the 2006/07 season in finfish pelagic trawl fisheries, which occurred in Subarea 48.3 (six mortalities, three entanglements) and Division 58.5.2 (zero mortalities, zero entanglements) of the Convention Area. The Working Group noted that in different fisheries there may be operational and management considerations that preclude the use of one or more practices and others may need to be used in their place to achieve the same outcome.

II.146 With respect to pelagic trawling gear for krill and demersal trawling gear targeting finfish where offal retention occurs, no clear evidence is available to suggest that these methods pose a serious risk to seabirds in the Convention Area at this stage. For this reason, mitigation measures additional to those required by Conservation Measure 25-03 are not considered necessary at present for these gear types.

II.147 However, it was also noted that with the exception of Subarea 48.3 in 2006/07, observer data on seabird collisions with trawl warps were generally lacking in the Convention Area, even though protocols for the collection of these data have now been established (SC-CAMLR-XXV, Annex 5, Appendix D, paragraph 122). This form of trawl-related interaction is widely recognised as a major problem in fisheries outside the Convention Area, and vigilance by CCAMLR observers was requested so that future problems are rapidly identified and managed. Should this problem be identified in the future, trawl-warp protection through the use of streamer lines (Sullivan et al., 2006; WG-FSA-05/40) or other forms of mitigation may need to be considered as a mandatory measure.

Implications of seasonal changes in fishing activity in Subarea 48.3

II.148 The Working Group reviewed WG-FSA-07/55 which proposed a relaxation of the limitation of fish catch that may be taken between 1 March and 31 May and the requirement to undertake research trawls in this period. The paper reported that the original reason for these measures, that icefish were spawning offshore in this season, was no longer supported by the data. Furthermore, vessels fishing in this season have previously reported increased seabird interactions in the times and areas specified for research trawls. The effect of this change would be to increase the proportion of the fish catch that is taken during the period March–May, decreasing the proportion in the period leading up to March, and to allow vessels flexibility to avoid seabird interactions in this period. Ad hoc WG-IMAF agreed that the change is unlikely to lead to an increased risk to seabirds from this fishery, provided that the best-practice mitigation measures are used year-round.

Proposal for season extension in Division 58.5.2

II.149 WG-FSA-07/17 summarised the historic effort and seabird by-catch mitigation measures that have applied to the *D. eleginoides* longline fishery in Division 58.5.2. It

suggested that there is now sufficient experience to show that fishing under the current season timing and regime of mitigation measures poses a very low level of risk to seabirds. The paper proposed that the period during which fishing is allowed be extended on a trial basis to include 1–31 October, subject to a three-seabird by-catch limit. It also proposed that the 1–30 September period be included as part of the ‘core’ winter season and the three-seabird by-catch limit no longer apply in September.

II.150 The Working Group supported the proposal to trial fishing from 1 to 31 October, and recommended it proceed subject to a three-seabird by-catch limit. While supporting the extensive range of proven mitigation measures proposed for the trial, the Working Group noted that fishing during October was moving progressively closer to the seasonal period when seabird abundance, especially of white-chinned petrels, increased significantly and that this species was the most likely to interact with fishing operations and the most difficult to mitigate against. The Working Group noted that, while the paper presented seabird abundance data for seven seasons, which showed relatively low abundance of white-chinned petrels in October, there was a need for some caution due to the longer-term potential for the timing of increased abundance on the fishing grounds to occur earlier in a year.

II.151 In respect of the proposal to include 1–30 September as part of the core winter season and to remove the three-seabird by-catch limit presently applied to that period, the Working Group noted that while fishing had occurred in four seasons for the first half of September, there had been fishing in the latter half of September in only one season. For this reason, the Working Group recommended that 1–14 September could be included in the core season and not subject to the three-seabird by-catch limit, but that the three-seabird by-catch limit should continue to apply to fishing during the period from 15 to 30 September. It agreed to review the latter aspect after further fishing has occurred.

Fine-scale risk assessment

II.152 Information was provided to the Working Group on a risk-assessment approach that established by-catch limits based on the regional, rather than global, conservation status of seabirds (WG-FSA-07/19). The approach was developed for a trial of longline fishing in the Macquarie Island toothfish fishery, which lies just outside the CAMLR Convention Area. Several threatened seabird species which have very small (10 to <100 annual breeding pairs) breeding populations on Macquarie Island are potentially vulnerable to interactions with fishing vessels. Seabird by-catch limits categorised seabirds into three groups of species with a different limit for each group. The groupings reflected the varying conservation status of the seabird populations breeding on Macquarie Island, and their vulnerability to fisheries interactions. The group containing those species with the most critical conservation status and highest risk of interacting with fishing operations had a by-catch limit of one seabird; limits on the other categories were two and three individuals respectively. In addition, if a total of three seabirds from categories 1–3 were killed as a result of interactions with fishing gear, then longline fishing was to cease for the remainder of the season.

II.153 The Working Group supported the concept outlined in WG-FSA-07/19, noting that the inclusion of regional information had merit for areas where populations of threatened species are extremely small. It noted the need for further work before regional conservation status could be included as part of by-catch risk assessment for CCAMLR fisheries.

INCIDENTAL MORTALITY OF SEABIRDS IN RELATION TO NEW AND EXPLORATORY FISHERIES

New and exploratory fisheries operational in 2006/07

II.154 Of the 41 applications for exploratory longline fisheries for 2006/07, 28 were undertaken (WG-FSA-07/4). No incidental seabird mortality was recorded. The strict adherence to the requirements in Conservation Measures 24-02 and 25-02 has proven successful in achieving zero, or extremely low, by-catch of seabirds.

New and exploratory fisheries proposed for 2007/08

II.155 The assessment of the risk to seabirds posed by new and exploratory longline fisheries in the Convention Area is incorporated into SC-CAMLR-XXVI/BG/31, and is summarised in Table 20 and Figure 2, and also includes an assessment of recommended levels of observer coverage.

II.156 Forty-four notifications for exploratory longline fisheries, submitted by 12 countries, were received by CCAMLR in 2007. No notifications for new longline fisheries were received. The areas for which proposals were received are:

Subarea 48.6	Japan, Republic of Korea, New Zealand, South Africa
Division 58.4.1	Australia, Japan, Republic of Korea, Namibia, New Zealand, Spain, Ukraine, Uruguay
Division 58.4.2	Australia, Japan, Republic of Korea, Namibia, New Zealand, South Africa, Spain, Ukraine, Uruguay
Division 58.4.3a	Uruguay
Division 58.4.3b	Australia, Japan, Republic of Korea, Namibia, Spain, Uruguay
Subarea 88.1	Argentina, Republic of Korea, Namibia, New Zealand, Russia, South Africa, Spain, UK, Uruguay
Subarea 88.2	Argentina, New Zealand, Russia, South Africa, Spain, UK, Uruguay.

II.157 The areas listed above were assessed in relation to the risk of seabird incidental mortality according to the approach and criteria set out in SC-CAMLR-XXVI/BG/31.

II.158 Those notifications that provided sufficient information to indicate that the proposals fully comply with relevant seabird by-catch minimisation measures (Conservation Measures 24-02 and 25-02, and the relevant measures in the 41-series) and do not conflict with the IMAF assessment, were:

Argentina	CCAMLR-XXVI/13 – 88.1, 88.2
Australia	CCAMLR-XXVI/14 – 58.4.1, 58.4.2
Japan	CCAMLR-XXVI/15 – 48.6, 58.4.1, 58.4.2, 58.4.3b
Namibia	CCAMLR-XXVI/17 – 58.4.1, 58.4.2, 58.4.3b, 88.1
New Zealand	CCAMLR-XXVI/18 – 48.6, 58.4.1, 58.4.2, 88.1, 88.2
Russia	CCAMLR-XXVI/19 – 88.1, 88.2
South Africa	CCAMLR-XXVI/20 – 48.6, 58.4.2, 88.1, 88.2
Spain	CCAMLR-XXVI/21 – 58.4.1, 58.4.2, 58.4.3b, 88.1, 88.2
UK	CCAMLR-XXVI/22 – 88.1, 88.2
Ukraine	CCAMLR-XXVI/23 – 58.4.1, 58.4.2.

II.159 Those notifications that contained insufficient information to be certain that the proposals fully comply with relevant seabird by-catch minimisation conservation measures, but which express sufficient sentiment to indicate that this is the intention were:

Korea, Republic of CCAMLR-XXVI/16 – 48.6, 58.4.1, 58.4.2, 58.4.3b, 88.1

Uruguay CCAMLR-XXVI/24 – 58.4.1, 58.4.2, 58.4.3a, 58.4.3b, 88.1, 88.2.

II.160 Applications in the second category usually state intent to comply with relevant conservation measures, but then indicate elsewhere that their fishing plans do not comply. Typical examples include:

- (i) stating an intent to fish during the day without seeking a derogation from paragraph 4 of Conservation Measure 25-02 through implementation of the provisions of Conservation Measure 24-02;
- (ii) stating an intent to relax seabird by-catch mitigation measures without clearly seeking relevant derogations.

II.161 The Working Group welcomed the improvements in notifications this year and in particular that only 15% of the notifications were now assessed in the insufficient information category compared with 25% in 2006. Members were requested to take greater care in future submissions to ensure that the intent to comply with relevant seabird by-catch measures was clear.

II.162 Members who have submitted applications falling into the second category should be requested to confirm with SCIC that their proposals fully comply with relevant seabird by-catch minimisation conservation measures and do not conflict with the ad hoc WG-IMAF assessment for the subareas and divisions in which they wish to fish.

II.163 In 2005, the Working Group developed a checklist to assist Members when completing their notifications (SC-CAMLR-XXIV, Annex 5, Appendix O, paragraph 193). The Secretariat used this information in developing a pro forma and checklist to assist Members in fulfilling notification requirements. The Working Group was pleased with the number of Members that utilised the checklist and encouraged those countries that did not do so (Republic of Korea and South Africa), or altered the checklist without explanation (Uruguay), to use the pro forma and checklist in full in future notifications. The Working Group noted that, as the notification from Uruguay (CCAMLR-XXVI/24) had not been translated, it was uncertain whether the relevant information was contained within the document.

II.164 Setting of longlines within the Convention Area during daylight hours or outside normal fishing seasons using currently approved fishing gear still represents a risk for seabirds, even in areas of low to average risk. In all instances where the provisions of Conservation Measure 24-02 are applied, there remains the need for continued review of performance with respect to incidental mortality of seabirds during fishing operations. The Working Group reiterated its recommendation that any vessel operating under the provisions of this conservation measure, and which catches a total of three seabirds, as defined in SC-CAMLR-XXII, Annex 5, paragraphs 6.214 to 6.217, shall revert to night setting in accordance with Conservation Measure 25-02. Similar provisions were specified in previous years.

II.165 The Working Group discussed CCAMLR-XXVI/27, submitted by Australia, proposing improvements to line sink rate monitoring and reporting. The Working Group noted that, as the proposal had no technical implications for the work of ad hoc WG-IMAF, this was a matter for SCIC.

INTERNATIONAL AND NATIONAL INITIATIVES RELATING TO INCIDENTAL MORTALITY OF SEABIRDS IN RELATION TO LONGLINE FISHING

ACAP

II.166 The ACAP representative presented a report on the Third Meeting of the ACAP Advisory Committee (WG-FSA-07/26). This meeting was preceded by meetings of ACAP's Status and Trends Working Group and its Seabird Bycatch Working Group. WG-FSA-07/26 provided a summary of the major outcomes of the meeting. The progress of the ACAP Status and Trends Working Group and Breeding Sites Working Group are documented in paragraphs 127 to 129.

II.167 ACAP's Taxonomy Working Group recently applied their decision-making guidelines to six pairs of taxa currently listed under Annex 1 of ACAP. It concluded that available data for the taxa considered did not call for an amendment to the species currently listed under Annex 1 of the Agreement. However, it was recognised that data pertinent to this taxonomic process are sometimes meagre and that new data may be highly influential in future analyses.

II.168 Prior to the Advisory Committee meeting, ACAP's Seabird Bycatch Working Group (WG-FSA-07/P6) assessed the suitability of pelagic mitigation technologies for future research, and reviewed seabird by-catch mitigation measures for pelagic longline fishing to identify knowledge gaps. The products of this work are summarised in two tables (WG-FSA-07/P6, Appendix 4, Tables 1 and 2), which have been endorsed by ACAP as representing the current best scientific advice for pelagic fisheries. In assessing the suitability of mitigation measures for future research, each measure was assigned a priority ranking on a five-point scale, according to criteria on potential effectiveness, practicality and cost. Bird-scaring lines, the bait-setting capsule and side setting were ranked the highest priority for research; weighted branchlines, the bait pod, smart hooks and circle hooks were high priorities; and blue-dyed squid was of moderate priority. Research on technologies such as the underwater setting chute, night setting, line shooters, thawed bait, strategic offal discharge, blue-dyed fish, fish oil, life status of bait and bait-casting machines, were considered a lower priority. The literature review of mitigation measures showed that some of the measures adopted or under consideration by some RFMOs would benefit from further development and testing.

FAO IPOA-Seabirds

II.169 Last year the Working Group recommended that CCAMLR Members support an initiative proposed by BirdLife International to work with FAO and Member States to secure support for FAO's 27th Meeting of COFI, for the development of best-practice guidelines for IPOA-Seabirds (SC-CAMLR-XXV, Annex 5, Appendix D, paragraph 156). At the COFI meeting, FAO members advised the Committee on their progress to develop or implement

their NPOAs for seabirds. Many Members were of the view that FAO should seek to strengthen the implementation of the IPOA-Seabirds by developing best-practice technical guidelines to support the elaboration of NPOAs. The Committee agreed that, depending on cost and related considerations, the guidelines would be developed through continuing joint work between FAO and relevant bodies and organisations or an expert consultation. It was also agreed that FAO should, in cooperation with relevant bodies, develop best-practice guidelines to assist countries and RFMOs in the implementation of the IPOA-Seabirds and that the best-practice guidelines should be extended to other relevant fishing gears. Many Members expressed the view that CCAMLR, ACAP and BirdLife International were the most relevant bodies in that context.

Other international organisations and initiatives,
including non-governmental organisations

II.170 No information was reported under this agenda item.

RFMOs, tuna commissions and international governmental organisations
and implementation of Resolution 22/XXIII

Joint meeting of tuna RFMOs

II.171 The First Joint Meeting of Tuna RFMOs was held in Kobe, Japan, in January 2007. The meeting brought together the membership and cooperating non-members of CCSBT, IATTC, ICCAT, IOTC and WCPFC. FAO and the Organization for the Promotion of Responsible Tuna Fisheries also participated.

II.172 The purpose of the meeting was to enhance coordination among the tuna RFMOs to more effectively and comprehensively address issues that cut across oceans and organisations. As requested by the Commission (CCAMLR-XXV, paragraph 5.27), the Secretariat provided a paper to the meeting describing the scientific and fisheries management processes CCAMLR has followed in developing its seabird by-catch mitigation measures. The paper is available at www.tuna-org.org.

II.173 The joint meeting resulted in a Course of Action for Tuna RFMOs, comprising 14 key areas to be urgently addressed through cooperation and coordination among the five tuna RFMOs. This list included implementation of the precautionary approach and an ecosystem-based approach to fisheries management. A description of the latter included improved data collection on incidental by-catch and non-target species and the establishment of measures to minimise the adverse effect of fishing for highly migratory fish species on ecologically related species, particularly sea turtles, seabirds and sharks.

II.174 Progress by tuna RFMOs to implement the Course of Action will be discussed at a meeting of tuna RFMO chairs in January 2008 and at the 2nd Meeting of Tuna RFMOs to be held in 2009.

WCPFC

II.175 Ms LeBoeuf reported on events at recent WCPFC meetings, recalling that WCPFC adopted a binding conservation and management measure (WCPFC-CMM 2006-02) for reducing seabird by-catch in 2006. Implementation of CMM 2006-02 will begin in January 2008 and requires that WCPFC adopt, at its 2007 annual meeting in December, minimum technical specifications for each of the seabird by-catch mitigation methods listed in the measure. Specifications are to be based on advice and recommendations from the WCPFC's Scientific Committee (SC) and the Technical and Compliance Committee (TCC).

II.176 Just prior to the SC's meeting in August 2007, the Secretariat of the Pacific Community's Oceanic Fisheries Programme led an ecological risk assessment workshop, providing information on the results of that workshop at which a proposed methodology and framework for future work on such an assessment by the WCPFC were discussed.

II.177 It also was noted that at the SC meeting, ACAP provided a report of its Seabird Bycatch Working Group, reviewing the effectiveness of a range of seabird by-catch mitigation measures and detailing priorities for further research in pelagic fisheries. ACAP's report and the results of the ecological risk assessment will provide additional scientific information to WCPFC as it implements CMM 2006-02.

II.178 Neither the SC nor the TCC, at their recent meetings, reached consensus regarding the advice to be provided to the Commission on the identification of minimum technical specifications for some of the mitigation measures in CMM 2006-02, although consensus was reached on the specifications for most measures (WCPFC-TCC3-2007/22 and WCPFC-TCC3-2007/37). Both bodies noted that insufficient data had been provided to them regarding proposals to use lightweight streamer lines and a new line-weighting regime. It was reported that the lack of empirical evidence on the use of these technical specifications, coupled with significant differences of opinion regarding the application of mitigation measures in the WCPFC Convention Area, prevented these bodies from conducting a rigorous analysis of those proposed specifications. Both the SC and the TCC requested that the Commission require WCPFC members wishing to propose new specifications to provide to the SC and the TCC more detailed and specified information about their use in the hope of enhancing WCPFC's review process in the future. Documents related to these meetings are on the WCPFC website at: www.wcpfc.int/.

ICCAT

II.179 The ICCAT Sub-committee on Ecosystems met in September 2007. Among other things, the Sub-committee discussed methodology to be used in conducting a risk assessment of the impacts of ICCAT fisheries on seabird species. The Sub-committee adopted a six-stage approach, including the: (i) identification of seabird species most at risk; (ii) collation of available data on at-sea distribution of these species; (iii) analysis of the spatial and temporal overlap between species distribution and ICCAT longline fishing effort; (iv) review of existing by-catch rate estimates for ICCAT longline fisheries; (v) estimation of total annual seabird by-catch in the ICCAT Convention Area; and (vi) assessment of the likely impact of this by-catch on seabird populations. Based on this information, a preliminary risk assessment exercise was undertaken, representing the first stage of the assessment.

II.180 As part of this preliminary assessment, the Sub-committee reviewed available data on seabird by-catch rates in ICCAT fisheries, along with data from studies of remote-tracking, population status and demography for seabird species recorded as by-catch in ICCAT fisheries (SCRS-ECO-29-Rev. 2). Thirty-six seabird species have been recorded as by-catch in ICCAT longline fisheries and five additional ones are considered potential by-catch species. A review of SCRS-2007-129 included updated information on the seabird risk prioritisation exercise. Species with highest-risk score were determined to be six species of albatross from South Georgia and the Tristan da Cunha Islands, black-browed albatross from the Falkland/Malvinas Islands, and six shearwater species. An update on the analysis of seabird distribution and overlap with ICCAT longline fishing effort was also provided, with the Sub-committee noting there may be seabird species identified as high priority for which very few by-catch or distribution data currently exist. The Sub-committee reviewed data of longline effort in the ICCAT Convention Area by flag for the period from 2000 to 2005 and available estimates of seabird by-catch from those fleets with active observer programs, noting that more than 70% of the total longline fishing effort for the period has no associated information about seabird by-catch levels.

II.181 Based on these discussions, the Sub-committee made several recommendations to the ICCAT Scientific Committee regarding the need for increased data collection by Parties, the consideration of an ICCAT regional observer program, greater investment by the ICCAT Secretariat in ecosystem issues, and whether the Commission should consider precautionary management actions for seabird species, such as the introduction of mitigation measures, in advance of complete knowledge of the impact of ICCAT fisheries on seabirds.

II.182 To continue work on the assessment, it was decided that a three-day intersessional ICCAT meeting would be held in early 2008, at which seabird-tracking analysis, by-catch and population modelling would be discussed.

CCSBT

II.183 Mr N. Smith (New Zealand) reported on the outcomes of CCSBT's 7th Meeting of the Ecologically Related Species Working Group, held in July 2007. The meeting was unable to agree on specific recommendations to the CCSBT Commission on seabird by-catch levels or seabird by-catch mitigation. Ad hoc WG-IMAF's discussion of this item was limited, as documents pertaining to this meeting were not yet available on the CCSBT's website for review.

II.184 The Working Group noted the considerable overlap between the distributions of seabirds that are vulnerable to interactions with longline fishing, including species that breed or forage within the CAMLR Convention Area and longline fishing managed by CCSBT. The Working Group noted with serious concern that CCSBT had made little progress in the assessment and mitigation of CAMLR Convention Area seabird by-catch within the CCSBT Convention Area.

IOTC

II.185 Mr Baker provided a report on the Third Session of the IOTC Working Party on Ecosystems and By-catch (WPEB), which was held in the Seychelles in July 2007. The meeting considered recent initiatives by two other RFMOs to adopt a mitigation approach requiring fishers to select two measures, to be used in combination, from a 'menu' of seabird mitigation technical measures. It recommended that IOTC give serious consideration to adopting a similar approach to manage seabird by-catch in its fisheries, and identified a range of technical issues that might be considered in any future revision of IOTC Resolution 06/04 (Seabird by-catch in longline fisheries), based on best-practice advice provided by ACAP. WPEB further noted that the seabird by-catch mitigation measures recommended by ACAP did not include line-throwing devices (line shooters and bait-casting machines) because their effectiveness is not supported by empirical data, and that the use of the 'American longline system' equipped with a line-throwing device by surface longline vessels targeting swordfish (under paragraph 4 of IOTC Resolution 06/04), may not be achieving the desired effect. This fishing method is currently exempt from the provisions of IOTC Resolution 06/04. WPEB agreed that this issue should also be brought to the attention of the IOTC Scientific Committee at its next meeting.

IATTC

II.186 Ms K. Rivera (USA) provided a report on activities of IATTC. Based on discussions at the IATTC By-catch and Stock Assessment Working Groups in February and May 2007 respectively, the IATTC Secretariat tabled a paper regarding seabird interactions with IATTC fisheries and possible mitigation tools to address such interactions in June 2007 (IATTC-75-07c). The mitigation measures discussed within the paper are based largely on those contained within the WCPFC's CMM 2006-02. This document further notes the work of other RFMOs to address seabird by-catch and the need for establishing consistent approaches, such as in the areas of assessments, monitoring incidental catch, and the development and use of effective and practicable mitigation measures, among RFMOs adjacent to the IATTC Convention Area, such as WCPFC.

II.187 No binding mitigation requirements were adopted by the IATTC Commission, although there will be further discussion of doing so at the IATTC's By-catch and Stock Assessment Working Groups in 2008.

General

II.188 The Working Group recommended that a standing invitation be extended to ACAP and BirdLife International to participate in future meetings of ad hoc WG-IMAF as invited expert observers. The Working Group noted that the Scientific Committee has Rules of Procedure for observers, and that its request would have to be approved by the Scientific Committee prior to the issuance of invitations for next year's ad hoc WG-IMAF meeting.

II.189 The Working Group was encouraged by the progress made at some of the RFMOs toward addressing the issue of seabird by-catch in their fisheries. The Working Group discussed with interest recent developments at WCPFC and ICCAT, including the initiation

of risk assessments in both RFMOs to better assess the level of interactions between seabirds and the fisheries within their Convention Areas. The Working Group noted its support of risk assessments in evaluating levels of seabird by-catch, recalling the work of some of the Working Group's members to describe the approach used by ad hoc WG-IMAF (WG-FSA-07/P2) (paragraphs 176, 177, 179 and 180).

II.190 The Working Group was also encouraged by WCPFC's progress toward addressing seabird by-catch by adopting binding conservation measures, but noted that there is still no best-practice mitigation strategy that has been rigorously tested and available for widespread uptake by RFMOs with responsibility for managing pelagic longline fisheries. The Working Group also noted with concern the lack thus far of a rigorous review process by which WCPFC and other RFMOs may consider such measures, based on best practices.

II.191 This is especially of concern where RFMOs manage fisheries in waters adjacent to the CAMLR Convention Area, including the WCPFC, particularly where seabird species which breed in the Convention Area may be distributed.

II.192 The Working Group reaffirmed the urgent need to work collaboratively with other RFMOs to address seabird by-catch for shared species and recalled that CCAMLR and WCPFC are in the process of finalising a Memorandum of Understanding to facilitate the sharing of information, in part related to the need to address seabird by-catch (CCAMLR-XXVI/BG/9). The Working Group recommended that the Scientific Committee communicate with WCPFC by encouraging it and its subsidiary bodies to rigorously consider scientific and technical information when evaluating such measures and their application. The Working Group further recommended that the Scientific Committee stress the need for WCPFC and ICCAT to continue their work assessing risk to seabird populations and for mitigating such risks via adaptive and precautionary decision-making, including the use of adequate levels of observer coverage and detailed reporting of implementation of conservation measures to truly achieve reductions in seabird by-catch.

II.193 The Working Group requested that the Scientific Committee extend an offer of technical assistance on conducting seabird risk assessments generally to other RFMOs, and specifically to WCPFC and ICCAT, should they desire such support.

II.194 With regard to the effectiveness of Resolution 22/XXV, the Working Group recalled the progress being made by ICCAT and WCPFC, described in paragraph 1 of this resolution, but expressed concern at the lack of progress in the other RFMOs, where little had been done to assess the risk of their fisheries to seabird species within their Convention Areas. The Working Group reaffirmed that the key to future progress is the employment of robust scientific observer programs that can assist in the development of statistical estimations of incidental seabird mortality and in the targeting of efforts to reduce such mortality. Data derived from such observer programs have been critical to CCAMLR's success in reducing seabird by-catch, and the Working Group believed that such information would be invaluable to similar efforts in other RFMOs and should be a high priority for their work.

II.195 Pursuant to paragraph 2 of Resolution 22/XXV, the Working Group encouraged the Secretariat to continue to contact Flag States whose vessels fish in areas where unregulated fishing takes place or where systematic data reporting has not yet been introduced by the RFMOs listed in Appendix 1 of Resolution 22/XXV. The Working Group applauded Contracting Parties that have requested that the topic of seabird mortality be included on the

agenda of relevant RFMO meetings and the active role these Parties have played in advancing the adoption of risk assessment methodology and mitigation measures within these RFMOs. However, the Working Group noted the lack of reporting as required under paragraph 5 of Resolution 22/XXV, encouraging Contracting Parties to provide information on this matter in the future.

FISHERY REPORTS

II.196 The Working Group reviewed the Fishery Reports developed by WG-FSA (Annex 5, Agenda Items 5.1 and 5.2) and the information relating to the by-catch of seabirds and marine mammals contained within the reports.

II.197 The Working Group updated the Fishery Reports based on the information contained in SC-CAMLR-XXV, Annex 5, Appendix D, and the information contained in WG-FSA-07/6 Rev. 1, 07/7 Rev. 1 and 07/8 Rev. 1.

II.198 The Working Group recommended that the process of updating Fishery Reports continue and noted that this process provided constructive interaction with WG-FSA and contributed to the streamlining of the work of the Scientific Committee's working groups.

STREAMLINING THE WORK OF THE SCIENTIFIC COMMITTEE

Streamlining of agenda

II.199 Ad hoc WG-IMAF adopted the agenda streamlining recommended last year (SC-CAMLR-XXV, Annex 5, Appendix D, paragraph 181) and noted that its agenda for this year's meeting was a useful improvement (Appendix A). Based on the experiences at this meeting, the Working Group developed additional recommendations for future agenda improvements, including:

- (i) discontinue the current method for estimation of IUU catches of seabirds but, if feasible, develop alternate methods;
- (ii) a review of its agenda to identify those tasks which could be completed on a biennial and triennial basis to allow more time to undertake high-priority tasks.

Interaction with WG-FSA

II.200 The Working Group noted improved interactions with WG-FSA this year on observer and by-catch matters had allowed the transfer of useful knowledge on fishing technologies and practices which had been beneficial to both groups. The ongoing dialogue on matters of mutual interest enhances the quality of the advice able to be provided to the Scientific Committee and provides a useful element of peer review during meetings.

II.201 With respect to the development of new mitigation measures, ad hoc WG-IMAF noted the improved dialogue on the consideration of their impact on other taxa (paragraphs 97 and 98). The Working Group recommended continued cooperative efforts to resolve such matters in a timely manner.

Future focus of the work of ad hoc WG-IMAF

II.202 The Scientific Committee established ad hoc WG-IMALF in 1993. In 2001 it decided that its scope should be expanded to cover fishing other than by longlines and the group was renamed ad hoc WG-IMAF. The Working Group noted the very positive results in 2006/07 with respect to seabird and marine mammal by-catch throughout the Convention Area.

II.203 The Working Group agreed that despite the continuing reductions in by-catch in the Convention Area, there was an ongoing need to remain vigilant in the monitoring of by-catch and the implementation of conservation measures, and to continue to strive to minimise seabird and marine mammal by-catch in all Convention Area fisheries.

II.204 Noting that time delays in responding to changing fishery dynamics and by-catch rates could have serious consequences for the conservation of seabirds and marine mammals, and that a biennial meeting of ad hoc WG-IMAF may mean three-year delays between the recognition of a problem and the development of a solution, the Working Group recommended that, for the time being, annual meetings continue.

II.205 The Working Group noted the increasing need to focus on the by-catch of Convention Area seabirds outside the Convention Area given CCAMLR's responsibility for these Antarctic marine living resources (Convention Article I) and the positive results being obtained within the Convention Area. To date, CCAMLR measures and practices have been held up as a role model outside the Convention Area (paragraphs 175 to 182) and the mitigation measures adopted and risk-assessment procedures within the Convention Area have been, or are in the process of being, adopted by neighbouring RFMOs.

II.206 As a result of the discussions detailed in paragraphs 202 to 205, and reflecting on discussions at last year's ad hoc WG-IMAF meeting (SC-CAMLR-XXV, Annex 5, Appendix D, paragraphs 181 to 197), the Working Group undertook a preliminary review of its terms of reference (SC-CAMLR-XII, paragraph 10.19). The Working Group made additional suggestions for consideration during the intersessional period with a view to ad hoc WG-IMAF recommending revised terms of reference in 2008.

Future research plan and duration of the meeting

II.207 The Working Group again discussed the development of a medium-term research plan for ad hoc WG-IMAF and the time required to conduct its core work and noted that at present it still required the allotted five days to conduct its work program.

WG-IMAF 2008 workshop

II.208 The Working Group recalled its proposal in 2006 to conduct short workshops in association with the annual ad hoc WG-IMAF meeting to address critical medium-term items. The use of invited experts at such workshops was highlighted by the Working Group as likely being crucial to their success.

II.209 The Working Group, noting the need to review its terms of reference (paragraph 206), review the duration and frequency of meetings, and develop a medium-term plan for the approval of the Scientific Committee, recommended a one-day workshop to address these issues.

II.210 The proposed terms of reference for the workshop are as follows:

- (i) review and recommend revisions to the terms of reference for ad hoc WG-IMAF;
- (ii) develop short- and medium-term work plans for ad hoc WG-IMAF, particularly considering the work plan of WG-FSA for dealing with mitigation of the by-catch of fish and invertebrate by-catch, the work plan of the Scientific Committee and developments in other international bodies concerned with the interaction of fisheries and Convention Area birds or mammals;
- (iii) review the frequency of meetings of ad hoc WG-IMAF, in particular:
 - (a) consider the conditions under which a change in meeting frequency could take place and catalogue the advantages and disadvantages of such change;
 - (b) examine in detail the consequences of decreasing the frequency of WG-IMAF meetings on the work of WG-IMAF and the advice that it is able to provide WG-FSA, the Scientific Committee and the Commission;
 - (c) consider mechanisms that could be put in place to minimise the risk of impacting significantly on the work of WG-FSA, the Scientific Committee and Commission were the ad hoc WG-IMAF meeting frequency to be reduced.

II.211 The Working Group recommended that the workshop occur for one day in the week immediately prior to ad hoc WG-IMAF in 2008.

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Table 1: Observed incidental mortality of seabirds in the longline fisheries for *Dissostichus* spp. in Subareas 48.3, 48.4, 58.6, 58.7, 88.1 and 88.2 and Divisions 58.4.1, 58.4.2, 58.4.3 and 58.5.2 during the 2006/07 season, including related mitigation information. Sp – Spanish method; A – autoliner; N – night-time setting; D – daytime setting (including nautical dawn and dusk); O – opposite side to hauling; S – same side as hauling.

Vessel	Dates of fishing	Method	Sets deployed				No. of hooks observed (thousands)			No. of birds observed caught ¹						Observed seabird mortality (includes injured birds) ¹ (birds/thousand hooks)			Streamer line in use %		Offal discharge during	
			N	D	Total	%N	Obs.	Set	% observed	Dead		Injured		Uninjured		N	D	Total	N	D	Set (%)	Haul (%)
										N	D	N	D	N	D							
Subarea 48.3																						
<i>Antarctic Bay</i>	12/6–23/8/07	Sp	205	0	97	100	278.5	1153.6	24	0	0	0	0	0	5	0	0	0	100	(0)	O (100)	
<i>Argos Frøyanes</i>	9/5–24/8/07	A	292	0	292	100	385.3	1740.6	22	0	0	0	0	0	0	0	0	0	100	(0)	O (0)	
<i>Argos Georgia</i>	1/5–24/8/07	A	297	0	297	100	270.9	1848.7	14	0	0	0	0	0	0	0	0	0	100	(0)	O (0)	
<i>Argos Helena</i>	1/5–24/8/07	A	350	0	350	100	772.9	1826.1	42	0	0	0	0	0	0	0	0	0	100	(0)	O (1)	
<i>Insung No. 22</i>	13/5–6/7/07	Sp	106	0	106	100	252.9	1129.5	22	0	0	0	0	0	0	0	0	0	100	(4)	O (48)	
<i>Jacqueline</i>	1/5–4/8/07	Sp	247	0	247	100	327.2	1594.8	20	0	0	0	0	0	0	0	0	0	100	(0)	O (100)	
<i>Koryo Maru No. 11</i>	3/5–15/8/07	Sp	155	0	155	100	399.3	1728.8	23	0	0	0	0	0	0	0	0	0	100	(0)	O (100)	
<i>Punta Ballena</i>	1/5–17/7/07	A	133	0	133	100	256.5	899.0	28	0	0	0	0	0	0	0	0	0	100	(0)	O (1)	
<i>San Aspiring</i>	1/5–20/8/07	A	210	0	210	100	733.8	1755.4	41	0	0	0	0	1	0	0	0	0	100	(0)	O (100)	
<i>Viking Bay</i>	1/5–24/8/07	Sp	223	0	223	100	334.4	1424.9	23	0	0	0	0	4	0	0	0	0	100	(0)	O (94)	
Total						100	4011.7	15101.4	27							0	0	0				
Subarea 48.4																						
<i>San Aspiring</i>	7/4–15/4/07	A	58	0	58	100	160.2	388.0	41	0	0	0	0	0	0	0	0	0	100	(0)	O (100)	
Total						100	160.2	388.0	41							0	0	0				
Subarea 48.6																						
<i>Frøyanes</i>	21/3–2/4/07	A	6	13	19	32	33.7	78.2	43	0	0	0	0	0	0	0	0	0	100	100	(0)	O (0)
<i>Shinsei Maru No. 3</i>	29/3–29/6/07	A	116	96	212	55	484.6	963.8	50	0	0	0	0	0	0	0	0	0	100	100	(0)	O (0)
Total						44	518.3	1042.0	50							0	0	0				
Divisions 58.4.1, 58.4.2, 58.4.3a, 58.4.3b																						
<i>Tronio</i>	1/12–22/3/07	Sp	0	201	201	0	1098.7	2192.7	50	0	0	0	0	0	0	0	0	0	100	100	(0)	O (3.5)*
<i>Antillas Reefer</i>	1/1–28/3/07	Sp	14	115	129	11	1413.0	1413.0	100	0	0	0	0	0	0	0	0	0	100	100	(0)	O (0)
<i>Paloma V</i>	1/12–22/3/07	Sp	14	150	164	9	1146.9	1898.9	60	0	0	0	0	0	0	0	0	0	100	100	(0)	O (0)
<i>Insung No. 1</i>	18/12–7/3/07	Sp	11	137	148	7	1040.8	1194.4	87	0	0	0	0	0	0	0	0	0	100	100	(0)	O (0)
<i>Shinsei Maru No. 3</i>	31/12–4/3/07	A	32	132	164	20	216.5	742.1	29	0	0	0	0	0	0	0	0	0	100	100	(0)	O (0)
<i>Jung Woo No. 2²</i>	28/2–29/3/07	Sp	5	46	51	10	310.0	336.8	0	0	0	0	0	0	0	0	0	0	100	100	(0)	O (0)
Total						10	5225.9	7777.9	67							0						
Division 58.5.2																						
<i>Janas</i>	27/4–18/6/07	A			143		313.6	796.1	39	0	0	0	0	0	0	0	0	0	100*	100*	(0)	(0)
<i>Janas</i>	15/7–3/9/07	A	69	59	128	54	317.4	892.5	35	0	0	0	0	0	0	0	0	0	100	100	(0)	(0)
Total						54	631.0	1688.6	37							0	0	0				
Subareas 58.6, 58.7, Area 51																						
<i>Koryo Maru No. 11</i>	10/2–30/3/07	Sp	75	0	75	100	134.6	738.3	18	0	0	0	0	2	0	0	0	0	100		(0)	O (100)
<i>Ross Mar</i>	25/7–24/8/07	A	114	0	114	100	82.5	598.5	13	0	0	0	0	0	0	0	0	0	100		(0)	O (98)
<i>Ross Mar</i>	24/4–12/6/07	A	236	1	237	99	144.1	855.9	16	0	0	0	0	0	0	0	0	0	100	100	(0)	O (0)
Total						100	361.2	2192.7	17							0	0	0				

(continued)

Table 1 (continued):

Vessel	Dates of fishing	Method	Sets deployed				No. of hooks observed (thousands)			No. of birds observed caught ¹						Observed seabird mortality (includes injured birds) ¹ (birds/thousand hooks)			Streamer line in use %		Offal discharge during	
			N	D	Total	%N	Obs.	Set	% observed	Dead		Injured		Uninjured		N	D	Total	N	D	Set (%)	Haul (%)
										N	D	N	D	N	D							
Subareas 88.1, 88.2																						
<i>Avro Chieftain</i>	4/12–6/2/07	A	0	101	101	0	252.8	561.8	44	0	0	0	0	0	0	0	0	0	100	(0)	(0)	
<i>Insung No. 22</i>	8/12–1/2/07	Sp	0	109	109	0	947.5	983.3	96	0	0	0	0	0	0	0	0	0	100	(0)	(0)	
<i>Janas</i>	4/12–5/2/07	A	7	102	109	6	284.4	569.6	49	0	0	0	0	0	0	0	0	0	100	(0)	(0)	
<i>Jung Woo No. 2</i>	11/12–1/2/07	Sp	0	87	87	0	580.0	607.0	96	0	0	0	0	0	0	0	0	0	100	(0)	(0)	
<i>Ross Mar</i>	31/12–1/2/07	A	0	90	90	0	159.7	344.7	46	0	0	0	0	0	0	0	0	0	100	(0)	(1)	
<i>Ross Star</i>	3/1–2/2/07	A	0	61	61	0	118.3	345.6	34	0	0	0	0	0	0	0	0	0	100	(0)	(0)	
<i>San Aotea II</i>	1/12–6/2/07	A	0	128	128	0	204.2	561.4	36	0	0	0	0	0	0	0	0	0	100	(0)	(0)	
<i>San Aspiring</i>	1/12–1/2/07	A	0	82	82	0	275.8	574.2	48	0	0	0	0	0	0	0	0	0	100	(0)	(0)	
<i>Antartic II</i>	2/12–11/2/07	A	0	148	148	0	433.7	728.2	59	0	0	0	0	0	0	0	0	0	100	(0)	(0)	
<i>Argos Georgia</i>	1/12–8/2/07	A	58	78	136	43	291.7	535.8	54	0	0	0	0	0	0	0	0	0	100	100	(0)	(0)
<i>Argos Helena</i>	2/12–14/2/07	A	15	167	182	8	342.5	657.9	52	0	0	0	0	0	0	0	0	0	100	100	(0)	(0)
<i>Froyanes</i>	1/12–15/2/07	A	0	219	219	0	398.5	875.7	45	0	0	0	0	0	0	0	0	0	100	(0)	(0)	
<i>Viking Sur</i>	4/1–14/2/07	A	0	62	62	0	229.6	372.6	61	0	0	0	0	0	0	0	0	0	100	(0)	(0)	
<i>Volna</i>	29/12–2/3/07	Sp			83	0	213.1	641.7	33	0	0	0	0	0	0	0	0	0	100*	(0)	(0)	
<i>Yantar</i>	29/12–1/3/07	Sp	0	77	77	0	168.5	851.5	19	0	0	0	0	0	0	0	0	0	100	(0)	(0)	
Total						4	4900.3	9211.0	53						0	0	0					

* Information obtained from cruise report.

¹ Bird 'caught' as defined by the Commission at CCAMLR-XXIII, paragraphs 10.30 and 10.31.

² *Jung Woo No. 2* also conducted a small amount of fishing in Subarea 48.6 during this cruise.

Table 2: Total extrapolated incidental mortality of seabirds and observed mortality rates (birds/thousand hooks) in longline fisheries in Subareas 48.3, 48.4, 48.6, 58.6, 58.7, 88.1 and 88.2 and Divisions 58.4.1, 58.4.2, 58.4.3a, 58.4.3b and 58.5.2 from 1997 to 2007 (- indicates no fishing occurred).

Subarea/division	Year										
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Subarea 48.3											
Extrapolated mortality	5 755	640	210*	21	30	27	8	27	13	0	0
Observed mortality rate	0.23	0.032	0.013*	0.002	0.002	0.0015	0.0003	0.0015	0.0011	0	0
Subarea 48.4											
Extrapolated mortality	-	-	-	-	-	-	-	-	0	0	0
Observed mortality rate	-	-	-	-	-	-	-	-	0	0	0
Subarea 48.6											
Extrapolated mortality	-	-	-	-	-	-	-	0	0	0	0
Observed mortality rate	-	-	-	-	-	-	-	0	0	0	0
Divisions 58.4.1, 58.4.2, 58.4.3a, 58.4.3b											
Extrapolated mortality	-	-	-	-	-	-	-	0	8	2	0
Observed mortality rate	-	-	-	-	-	-	-	0	<0.001	0.0002	0
Division 58.5.2											
Extrapolated mortality	-	-	-	-	-	-	0	0	0	0	0
Observed mortality rate	-	-	-	-	-	-	0	0	0	0	0
Subareas 58.6, 58.7											
Extrapolated mortality	834	528	156	516	199	0	7	39	76	0	0
Observed mortality rate	0.52	0.194	0.034	0.046	0.018	0	0.003	0.025	0.149	0	0
Subareas 88.1, 88.2											
Extrapolated mortality	-	0	0	0	0	0	0	1	0	0	0
Observed mortality rate	-	0	0	0	0	0	0	0.0001	0	0	0
Total seabird mortality	6 589	1 168	366	537	229	27	15	67	97	2	0

* Excluding *Argos Helena* line weighting experiment cruise.

Table 3: Observed incidental mortality of seabirds in the longline fisheries for *Dissostichus* spp. in Subarea 58.6 and Division 58.5.1 during the 2006/07 season (September–August). A – autoliner; N – night-time setting; D – daytime setting (including nautical dawn and dusk); NC – not collected; na – not applicable.

Vessel	Dates of fishing	Method	Set deployed				No. of hooks observed (thousands)			Hooks baited (%)	No. of birds observed caught						Observed seabird mortality (includes injured birds) (birds/thousand hooks)			Streamer use %	
			N	D	Total	%N	Obs.	Set	% observed		Dead		Injured		Uninjured		N	D	Total	N	D
											N	D	N	D	N	D					
Subarea 58.6																					
Ship 1	23/11–6/12/06	A	31	0	31	100	52.79	213.75	24.70	NC	0	-	0	-	-	-	0.0000	na	0.0000	100	-
Ship 1	16/2–10/3/07	A	17	0	17	100	110.20	420.75	26.19	NC	0	-	0	-	11	-	0.1165	na	0.1165	100	-
Ship 1	16/6–18/6/07	A	10	0	10	100	13.94	56.25	24.78	NC	2	-	1	-	0	-	0.0000	na	0.0000	100	-
Ship 2	5/2–19/2/07	A	58	0	58	100	60.81	242.04	25.12	NC	0	-	0	-	0	-	0.0000	na	0.0000	100	-
Ship 2	14/5–21/5/07	A	16	0	16	100	27.84	117.52	23.69	NC	0	-	0	-	0	-	0.0000	na	0.0000	100	-
Ship 3	9/9–23/9/06	A	51	0	51	100	93.82	359.62	26.09	NC	0	-	0	-	0	-	0.0000	na	0.0000	100	-
Ship 3	17/2–23/2/07	A	7	0	7	100	28.70	42.30	67.85	NC	0	-	0	-	2	-	0.0000	na	0.0000	100	-
Ship 3	28/6–3/8/07	A	84	0	84	100	162.98	609.6	26.74	NC	0	-	0	-	0	-	0.0000	na	0.0000	100	-
Ship 5	14/9–28/9/06	A	35	0	35	100	70.42	292.50	24.08	NC	21	-	0	-	7	-	0.0000	na	0.0000	100	-
Ship 5	17/2–16/3/07	A	74	0	74	100	118.29	477.95	24.75	NC	0	-	0	-	38	-	0.0439	na	0.0439	100	-
Ship 5	8/6–14/6/07	A	17	0	17	100	30.44	119.25	25.53	NC	0	-	0	-	0	-	0.0000	na	0.0000	100	-
Ship 6	28/11–5/12/06	A	29	0	29	100	31.67	129.00	24.55	NC	0	-	0	-	7	-	0.0000	na	0.0000	100	-
Ship 6	2/7–17/7/07	A	42	0	42	100	78.93	333.75	23.65	NC	1	-	3	-	0	-	0.0000	na	0.0000	100	-
Ship 7	9/11–15/11/06	A	31	0	31	100	43.50	174.00	25.00	NC	0	-	0	-	8	-	0.0230	na	0.0230	100	-
Ship 7	18/2–26/2/07	A	21	0	21	100	34.25	140.62	24.36	NC	2	-	0	-	0	-	0.0000	na	0.0000	100	-
Ship 7	6/4–11/4/07	A	62	0	62	100	98.97	411.00	24.08						0	-	0.0049	na	0.0049	100	-
Ship 8	18/12–28/12/06	A	86	0	86	100	117.64	462.00	25.46	NC	1	-	0	-	5	-	0.0065	na	0.0065	100	-
Ship 8	7/2–28/2/07	A	42	0	42	0	56.14	223.12	25.16	NC	0	-	0	-	0	-	0.0045	na	0.0045	100	-
			713			100	1 231.33	4 825.02	25.52		71		9		79		0.0650		0.0650		

(continued)

Table 3 (continued)

Vessel	Dates of fishing	Method	Set deployed				No. of hooks observed (thousands)			Hooks baited (%)	No. of birds observed caught						Observed seabird mortality (includes injured birds) (birds/thousand hooks)			Streamer use %	
			N	D	Total	%N	Obs.	Set	% observed		Dead		Injured		Uninjured		N	D	Total	N	D
											N	D	N	D	N	D					
Division 58.5.1																					
Ship 1	13/9–18/11/06	A	145	0	145	100	338.89	1 370.00	24.74	NC	32	-	0	-	18	-	0.0234	-	0.0234	100	-
Ship 1	12/1–14/2/07	A	107	0	107	100	253.40	997.95	25.39	NC	36	-	1	-	4	-	0.0371	-	0.0371	100	-
Ship 1	1/5–13/6/07	A	105	0	105	100	247.55	989.47	25.02	NC	11	-	10	-	1	-	0.0212	-	0.0212	100	-
Ship 2	23/9–6/11/06	A	102	0	102	100	210.20	859.14	24.47	NC	5	-	0	-	1	-	0.0058	-	0.0058	100	-
Ship 2	31/11–2/2/07	A	174	0	174	100	363.15	1 462.54	24.83	NC	10	-	0	-	16	-	0.0068	-	0.0068	100	-
Ship 2	16/3–10/5/07	A	146	0	146	100	343.00	1 369.16	25.05	NC	13	-	1	-	1	-	0.0102	-	0.0102	100	-
Ship 3	26/9–19/11/06	A	123	0	123	100	321.94	1 284.97	25.05	NC	12	-	0	-	2	-	0.0093	-	0.0093	100	-
Ship 3	27/12–14/2/07	A	93	0	93	100	365.18	1 258.17	29.02	NC	14	-	0	-	0	-	0.0111	-	0.0111	100	-
Ship 3	27/3–5/6/07	A	124	0	124	100	447.40	1 670.55	26.78	NC	15	-	0	-	0	-	0.0090	-	0.0090	100	-
Ship 5	2/10–11/12/06	A	183	0	183	100	376.56	1 544.65	24.38	NC	34	-	0	-	10	-	0.0220	-	0.0220	100	-
Ship 5	16/1–14/2/07	A	85	0	85	100	166.57	676.55	24.62	NC	19	-	0	-	11	-	0.0281	-	0.0281	100	-
Ship 5	27/4–5/6/07	A	90	0	90	100	232.35	930.40	24.97	NC	9	-	2	-	3	-	0.0118	-	0.0118	100	-
Ship 6	28/11–5/12/06	A	202	0	202	100	297.15	1 194.00	24.89	NC	18	-	0	-	7	-	0.0151	-	0.0151	100	-
Ship 6	16/1–14/2/07	A	79	0	79	100	175.85	690.37	25.47	NC	50	-	0	-	6	-	0.0724	-	0.0724	100	-
Ship 6	17/3–4/5/07	A	120	0	120	100	297.15	1 194.00	24.89	NC	20	-	0	-	2	-	0.0168	-	0.0168	100	-
Ship 6	2/6–27/6/07	A	55	0	55	100	145.50	600.00	24.25	NC	6	-	1	-	4	-	0.0183	-	0.0183	100	-
Ship 7	9/9–5/11/06	A	126	0	126	100	317.99	1 280.95	24.82	NC	28	-	5	-	21	-	0.0258	-	0.0258	100	-
Ship 7	21/2–14/2/07	A	139	0	139	100	319.82	1 311.00	24.40	NC	12	-	0	-	9	-	0.0092	-	0.0092	100	-
Ship 7	13/4–21/5/07	A	96	0	96	100	203.64	823.15	24.74	NC	1	-	0	-	6	-	0.0012	-	0.0012	100	-
Ship 8	1/9–21/11/06	A	201	0	201	100	355.17	1 357.54	26.16	NC	58	-	1	-	6	-	0.0435	-	0.0435	100	-
Ship 8	1/1–2/2/07	A	71	0	71	100	108.22	430.30	25.15	NC	15	-	1	-	2	-	0.0372	-	0.0372	100	-
Ship 8	27/3–5/5/07	A	186	0	186	100	263.07	1 054.58	24.95	NC	41	-	10	-	3	-	0.0484	-	0.0484	100	-
			2 752			100	6 149.75	24 349.44	25.26		459		32		133		0.0798		0.0798		

Table 4: Seabird mortalities in Subarea 58.6 and Division 58.5.1 within the French EEZs during the 2006/07 season (September–August).

Vessel	Hooks observed (thousands)	Hooks set (thousands)	Percentage of hook observed	% night sets	Number of seabird mortalities*		
					Night	Day	Total
Subarea 58.6							
Ship 1	52.79	213.75	24.70	100	0	-	0
Ship 1	1 10.20	420.75	26.19	100	49	-	49
Ship 1	13.94	56.25	24.78	100	0	-	0
Ship 2	60.81	242.04	25.12	100	0	-	0
Ship 2	27.84	117.52	23.69	100	0	-	0
Ship 3	93.82	359.62	26.09	100	0	-	0
Ship 3	28.70	42.30	67.85	100	0	-	0
Ship 3	1 62.98	609.6	26.74	100	0	-	0
Ship 5	70.42	292.50	24.08	100	0	-	0
Ship 5	1 18.29	477.95	24.75	100	21	-	21
Ship 5	30.44	119.25	25.53	100	0	-	0
Ship 6	31.67	129.00	24.55	100	0	-	0
Ship 6	78.93	333.75	23.65	100	0	-	0
Ship 7	43.50	174.00	25.00	100	4	-	4
Ship 7	34.25	140.62	24.36	100	0	-	0
Ship 7	98.97	411.00	24.08	100	2	-	2
Ship 8	1 17.64	462.00	25.46	100	3	-	3
Ship 8	56.14	223.12	25.16	100	1	-	1
	1 231.33	4 825.02	25.52		80		80
Division 58.5.1							
Ship 1	338.89	1 370.00	24.74	100	32	-	32
Ship 1	253.40	997.95	25.39	100	37	-	37
Ship 1	247.55	989.47	25.02	100	21	-	21
Ship 2	210.20	859.14	24.47	100	5	-	5
Ship 2	363.15	1 462.54	24.83	100	10	-	10
Ship 2	343.00	1 369.16	25.05	100	14	-	14
Ship 3	321.94	1 284.97	25.05	100	12	-	12
Ship 3	365.18	1 258.17	29.02	100	14	-	14
Ship 3	447.40	1 670.55	26.78	100	15	-	15
Ship 5	376.56	1 544.65	24.38	100	34	-	34
Ship 5	166.57	676.55	24.62	100	19	-	19
Ship 5	232.35	930.40	24.97	100	11	-	11
Ship 6	297.15	1 194.00	24.89	100	18	-	18
Ship 6	175.85	690.37	25.47	100	50	-	50
Ship 6	297.15	1 194.00	24.89	100	20	-	20
Ship 6	145.50	600.00	24.25	100	7	-	7
Ship 7	317.99	1 280.95	24.82	100	33	-	33
Ship 7	319.82	1 311.00	24.40	100	12	-	12
Ship 7	203.64	823.15	24.74	100	1	-	1
Ship 8	355.17	1 357.54	26.16	100	59	-	59
Ship 8	108.22	430.30	25.15	100	16	-	16
Ship 8	263.07	1 054.58	24.95	100	51	-	51
	6 149.75	24 349.44	25.26		491		491

* Includes dead and injured.

Table 5: Total estimated seabird by-catch and by-catch rate (birds/thousand hooks) in longline fisheries in Subarea 58.6 and Division 58.5.1 within the French EEZs in 2006/07.

	2006/07
Subarea 58.6	
Estimated by-catch	313
By-catch rate	0.0650
Division 58.5.1	
Estimated by-catch	1 944
By-catch rate	0.0798

Table 6: Total estimated seabird by-catch and by-catch rate (birds/thousand hooks) in longline fisheries in Subarea 58.6 and Division 58.5.1 within the French EEZ from 2000 to 2007.

	Season						
	2000/01*	2001/02*	2002/03*	2003/04*	2004/05	2005/06	2006/07
Subarea 58.6							
Estimated by-catch		1 243	720	343	242	235	313
By-catch rate		0.1672	0.1092	0.0875	0.0490	0.0362	0.0650
Division 58.5.1							
Estimated by-catch	1 917	10 814	13 926	3 666	4 387	2 352	1 944
By-catch rate	0.0920	0.9359	0.5180	0.2054	0.1640	0.0920	0.0798

* The number of observed hooks has not been collected and the values given are from the total number of hooks set.

Table 7: Species composition of birds killed in longline fisheries in Subarea 58.6 and Division 58.5.1 during the 2006/07 season (September–August). N – night-time setting; D – daytime setting (including nautical dawn and dusk); PRO – white-chinned petrel; PCI – grey petrel; MAH – northern giant petrel; MAI – southern giant petrel; PND – petrel not determined.

Vessel	Dates of fishing	No. of birds killed by group								Species composition (%)									
		Albatross		Petrels		Penguins		Total		PRO	%	PCI	%	MAH	%	MAA	%	PND	%
		N	D	N	D	N	D	N	D										
Subarea 58.6																			
Ship 1	23/11–6/12/06	0	0	0	0	0	0	0	0										
Ship 1	16/3–25/3/07	0	0	49	0	0	0	49	0	46	(93.8)			3	(6.2)				
Ship 1	16/6–18/6/07	0	0	0	0	0	0	0	0										
Ship 2	5/2–19/2/07	0	0	0	0	0	0	0	0										
Ship 2	14/5–21/5/07	0	0	0	0	0	0	0	0										
Ship 3	9/9–23/9/06	0	0	0	0	0	0	0	0										
Ship 3	17/2–23/2/07	0	0	0	0	0	0	0	0										
Ship 3	28/6–3/8/07	0	0	0	0	0	0	0	0										
Ship 5	14/9–28/9/06	0	0	0	0	0	0	0	0										
Ship 5	17/2–16/3/07	0	0	21	0	0	0	21	0	21	(100.0)								
Ship 5	8/6–14/6/07	0	0	0	0	0	0	0	0										
Ship 6	28/11–5/12/06	0	0	0	0	0	0	0	0										
Ship 6	2/07–17/7/07	0	0	0	0	0	0	0	0										
Ship 7	9/11–15/11/06	0	0	4	0	0	0	4	0	1	(25)			3	(75)				
Ship 7	18/2–26/2/07	0	0	0	0	0	0	0	0										
Ship 7	6/4–11/4/07	0	0	2	0	0	0	2	0	2	(100.0)								
Ship 8	18/12–28/12/06	0	0	3	0	0	0	3	0	2	(66.7)						1	(33.3)	
Ship 8	7/2–28/2/07	0	0	1	0	0	0	1	0			1	(100.0)						
Ship 8	11/5–26/5/07	0	0	1	0	0	0	1	0			1	(100.0)						
		0		80		0		80		72	(90)	1	(1.25)	3	(3.75)	3	(3.75)	1	(1.25)

(continued)

Table 7 (continued)

Vessel	Dates of fishing	No. of birds killed by group								Species composition (%)									
		Albatross		Petrels		Penguins		Total		PRO	%	PCI	%	MAH	%	MAA	%	PND	%
		N	D	N	D	N	D	N	D										
Division 58.5.1																			
Ship 1	13/9–18/11/06	0	0	32	0	0	0	32	0	28	(87.50)	4	(12.5)						
Ship 1	12/1–14/2/07	0	0	37	0	0	0	37	0	36	(97.3)	0		1	(2.7)				
Ship 1	1/5–13/6/07	0	0	21	0	0	0	21	0	1	(4.8)	10	(47.6)	10	(47.6)				
Ship 2	23/9–6/11/06	0	0	5	0	0	0	5	0	5	(100.0)	0							
Ship 2	31/11–2/2/07	0	0	10	0	0	0	10	0	10	(100.0)	0							
Ship 2	16/3–10/5/07	0	0	14	0	0	0	14	0	13	(92.5)	0		1	(7.5)				
Ship 3	26/9–19/11/06	0	0	12	0	0	0	12	0	12	(100.0)	0							
Ship 3	27/12–14/2/07	0	0	14	0	0	0	14	0	14	(100.0)	0							
Ship 3	27/3–5/6/07	0	0	15	0	0	0	15	0	13	(86.7)	2	(13.3)						
Ship 5	2/10–11/12/06	0	0	34	0	0	0	34	0	34	(100.0)	0							
Ship 5	16/1–14/2/07	0	0	19	0	0	0	19	0	19	(100.0)	0							
Ship 5	27/4–5/6/07	0	0	11	0	0	0	11	0			9	(81.8)	2	(18.2)				
Ship 6	28/11–5/12/06	0	0	18	0	0	0	18	0	14	(77.8)	4	(22.2)						
Ship 6	16/1–14/2/07	0	0	50	0	0	0	50	0	50	(100.0)	0							
Ship 6	17/3–4/5/07	0	0	20	0	0	0	20	0	20	(100.0)	0							
Ship 6	2/6–27/6/07	0	0	7	0	0	0	7	0			6	(85.7)	1	(14.3)				
Ship 7	9/9–5/11/06	0	0	33	0	0	0	33	0	23	(69.7)	5	(15.1)	4	(12.2)	1	(3)		
Ship 7	21/2–14/2/07	0	0	12	0	0	0	12	0	12	(100.0)	0							
Ship 7	13/4–21/5/07	0	0	1	0	0	0	1	0	1	(100.0)	0							
Ship 8	1/9–21/11/06	0	0	59	0	0	0	59	0	53	(89.8)	5	(8.5)	1	(1.7)				
Ship 8	1/1–2/2/07	0	0	16	0	0	0	16	0	15	(93.75)			1	(6.25)				
Ship 8	27/3–5/5/07	0	0	51	0	0	0	51	0	36	(70.6)	5	(9.8)	10	(19.6)				
	29/5–26/6/07	0	0	51	0	0	0	51	0	36	(70.6)	5	(9.8)	10	(19.6)				
		0	0	491	0	0	0	491	0	409	(83.3)	50	(10.2)	31	(6.31)	1	(0.2)	0	

Table 8: Observed incidental mortality of seabirds in the longline fisheries for *Dissostichus* spp. in Subarea 58.6 and Division 58.5.1 during the 2006/07 season (September–August). N – night-time setting; D – daytime setting (including nautical dawn and dusk).

Vessel	Dates of fishing	No. of birds observed caught						Streamer line in use		Attachment height above water (m)	Spacing of streamers per line (m)	No. of streamers per line	No. of lines	Streamer lines			Streamers		
		Dead		Injured		Uninjured		% setting						Total length of streamers (m)	Estimated length out of water (m)	Diameter (mm)	Minimal length (m)	Maximal length (m)	Diameter (mm)
		N	D	N	D	N	D	N	D										
Subarea 58.6																			
Ship 1	23/11–6/12/06	0	0	0	0	1	0	100	0	7	1.2	60	6	190	75	14	3.5	7	10
Ship 1	16/3–25/3/07	44	0	5	0	11	0	100	0	7	1.2	60	6	190	75	14	3.5	7	10
Ship 1	16/6–18/6/07	0	0	0	0	0	0	100	0	7	3.2	12	2	200	50	12	1	3	5
Ship 2	5/2–19/2/07	0	0	0	0	0	0	100	0	7	1.4	53	2	250	75	11.5	3	3	10
Ship 2	14/5–21/5/07	0	0	0	0	0	0	100	0	7	1.4	50	2	200	50	11.5	3	3	10
Ship 3	9/9–23/9/06	0	0	0	0	0	0	100	0	6	2	17	?	200	180	12	2	6	30
Ship 3	17/2–23/2/07	0	0	0	0	2	0	100	0										
Ship 3	28/6–3/8/07	0	0	0	0	0	0	100	0	10	1	25	2	150	50	8	2	3	3
Ship 5	14/9–28/9/06	0	0	0	0	7	0	100	0	5.5	4.5	16	6	160	80	13	1.5	3.5	15
																			50
Ship 5	17/2–16/3/07	21	0	0	0	38	0	100	0	8	5	12	1	250	80	11.5	2.5	5	10
Ship 5	8/6–14/6/07	0	0	0	0	0	0	100	0	8	3	66	2	250	40	11.5	2.5	5	250
Ship 6	28/11–5/12/06	0	0	0	0	7	0	100	0	7.5	1.2	120	2	150	36	11.5	60	1.4	50
Ship 6	2/7–17/7/07	0	0	0	0	0	0	100	0										
Ship 7	9/11–15/11/06	1	0	3	0	8	0	100	0	8	2.4	35	2	180	130	11	0.9	3	5
Ship 7	18/2–26/2/07	0	0	0	0	0	0	100	0	8	2.4	35	2	180	130	11	0.9	3	5
Ship 7	6/4–11/4/07 24/5–10/6/07	2	0	0	0	0	0	100	0	8	2.4	15	2	180	130	11	0.9	3	5
Ship 8	18/12–28/12/06 7/2–28/2/07	2	0	1	0	5	0	100	0	7	2.5	2	2	100	25	9	3	7	2
Ship 8	11/5–26/5/07	1	0	0	0	0	0	100	0	7	2.5	2	2	100	25	9	3	7	2
		71		9		79													

(continued)

Table 9: Specimens recovered from longline fisheries in Subarea 58.6 and Division 58.5.1 during 2006/07 (September–August) detailing the injury types. N – night-time setting; D – daytime setting (including nautical dawn and dusk); PRO – white-chinned petrel; PCI – grey petrel.

Vessel	Dates of fishing	No. birds killed by group								Species composition (%)				Where the seabirds are hooked					
		Albatross		Petrels		Penguins		Total		PRO	%	PCI	%	Beak	Wing	Foot	Neck	Body	Other or unknown
		N	D	N	D	N	D	N	D										
Subarea 58.6																			
Ship 1	23/11–6/12/06	0	0	0	0	0	0	0	0					0	0	0	0	0	0
Ship 1	16/3–25/3/07	0	0	44	0	0	0	44	0	44	(100.0)			10	28	2	0	1	3
Ship 1	16/6–18/6/07	0	0	0	0	0	0	0	0					0	0	0	0	0	0
Ship 2	5/2–19/2/07	0	0	0	0	0	0	0	0					0	0	0	0	0	0
Ship 2	14/5–21/5/07	0	0	0	0	0	0	0	0					0	0	0	0	0	0
Ship 3	9/9–23/9/06	0	0	0	0	0	0	0	0					0	0	0	0	0	0
Ship 3	17/2–23/2/07	0	0	0	0	0	0	0	0					0	0	0	0	0	0
Ship 3	28/6–3/8/07	0	0	0	0	0	0	0	0					0	0	0	0	0	0
Ship 5	14/9–28/9/06	0	0	0	0	0	0	0	0					0	0	0	0	0	0
Ship 5	17/2–16/3/07	0	0	21	0	0	0	21	0	21	(100.0)			5	14	0	2	0	0
Ship 5	8/6–14/6/07	0	0	0	0	0	0	0	0					0	0	0	0	0	0
Ship 6	28/11–5/12/06	0	0	0	0	0	0	0	0					0	0	0	0	0	0
Ship 6	2/7–17/7/07	0	0	0	0	0	0	0	0	1	(100.0)			0	1	0	0	0	0
Ship 7	9/11–15/11/06	0	0	1	0	0	0	1	0					0	0	0	0	0	0
Ship 7	18/2–26/2/07	0	0	0	0	0	0	0	0					0	0	0	0	0	0
Ship 7	6/4–11/4/07	0	0	2	0	0	0	2	0	2	(100.0)			0	2	0	0	0	0
Ship 7	24/5–10/6/07																		
Ship 8	18/12–28/12/06	0	0	2	0	0	0	2	0	2	(100.0)			2	0	0	0	0	0
Ship 8	7/2–28/2/07																		
Ship 8	11/5–26/5/07	0	0	1	0	0	0	1	0			1	(100.0)	1	0	0	0	0	0
		0		71		0		71		70		1		18	45	2	2	1	3

(continued)

Table 9 (continued)

Vessel	Dates of fishing	No. birds killed by group								Species composition (%)				Where the seabirds are hooked					
		Albatross		Petrels		Penguins		Total		PRO	%	PCI	%	Beak	Wing	Foot	Neck	Body	Other or unknown
		N	D	N	D	N	D	N	D										
Division 58.5.1																			
Ship 1	13/9–8/11/06	0	0	32	0	0	0	32	0	28	(87.5)	4	(12.5)	19	0	3	8	0	16
Ship 1	12/1–14/2/07	0	0	36	0	0	0	36	0	36	(100.0)	0		12	22	2	0	0	0
Ship 1	1/5–13/6/07	0	0	11	0	0	0	11	0	1	(9.1)	10	(90.9)	0	9	0	2	0	0
Ship 2	23/9–6/11/06	0	0	5	0	0	0	5	0	5	(100.0)	0		2	2	0	1	0	0
Ship 2	31/11–2/2/07	0	0	10	0	0	0	10	0	10	(100.0)	0		0	10	0	0	0	0
Ship 2	16/3–10/5/07	0	0	13	0	0	0	13	0	13	(100.0)	0		11	2	0	0	0	0
Ship 3	26/9–19/11/06	0	0	12	0	0	0	12	0	12	(100.0)	0		8	3	0	1	0	0
Ship 3	27/12–14/2/07	0	0	14	0	0	0	14	0	14	(100.0)	0		13	1	0	0	0	0
Ship 3	27/3–5/6/07	0	0	15	0	0	0	15	0	13	(86.7)	2	(13.3)	3	12	0	0	0	0
Ship 5	2/10–11/12/06	0	0	34	0	0	0	34	0	34	(100.0)	0		8	17	2	4	0	0
Ship 5	16/1–14/2/07	0	0	19	0	0	0	19	0	19	(100.0)	0		6	13	0	0	0	0
Ship 5	27/4–5/6/07	0	0	9	0	0	0	9	0	9	0	9	(100.0)	3	4	0	2	0	0
Ship 6	28/11–5/12/06	0	0	18	0	0	0	18	0	14	(77.8)	4	(22.2)	0	0	0	0	0	0
Ship 6	16/1–14/2/07	0	0	50	0	0	0	50	0	50	(100.0)	0		16	33	0	1	0	4
Ship 6	17/3–4/5/07	0	0	20	0	0	0	20	0	20	(100.0)	0		10	9	0	1	0	0
Ship 6	2/6–27/6/07	0	0	6	0	0	0	6	0	0		6	(100.0)	2	3	0	1	0	0
Ship 7	9/9–5/11/06	0	0	28	0	0	0	28	0	23	(82.2)	5	(17.8)	11	17	0	0	0	0
Ship 7	21/2–14/2/07	0	0	12	0	0	0	12	0	12	(100.0)	0		2	6	2	0	0	3
Ship 7	13/4–21/5/07	0	0	1	0	0	0	1	0	1	(100.0)	0		1	0	0	0	0	0
Ship 8	1/9–21/11/06	0	0	58	0	0	0	58	0	53	(91.4)	5	(8.6)	22	31	0	5	1	0
Ship 8	1/1–2/2/07	0	0	15	0	0	0	15	0	15	(100.0)	0		8	5	0	2	0	0
Ship 8	27/3–5/5/07	0	0	41	0	0	0	41	0	36	(87.8)	5	(12.2)	21	16	2	1	0	1
Ship 8	29/5–26/6/07	0	0	41	0	0	0	41	0	36	(87.8)	5	(12.2)	21	16	2	1	0	1
		0	0	459	0	0	0	459	0	409		50		178	214	11	29	1	24

Table 10: Observed incidences of seabird and marine mammal entanglements with trawl gear for the 2006/07 season. DIC – grey-headed albatross; DIM – black-browed albatross; PRO – white-chinned petrel; DAC – Cape petrel.

Vessel	Dates of fishing	Subarea/division	Species	Total observed	
				Mortality (dead or injured)	Released alive (uninjured)
<i>Insung Ho</i>	21/1–24/1/07	48.3	DIC	1	
			DIM		1
			PRO	3	1
<i>New Polar</i>	8/1–31/1/07	48.3	DIM		1
<i>Robin M Lee</i>	5/1–18/1/07	48.3			
<i>Dongsan Ho</i>	9/1–14/1/07	48.3	DIM	2	
<i>Southern Champion</i>	20/4–19/5/07	58.5.2			
<i>Southern Champion</i>	2/2–4/3/07	58.5.2			
<i>Southern Champion</i>	12/6–7/8/07	58.5.2	DAC	2	
<i>Saga Sea</i>	10/12–6/3/07	48.1, 48.2			
<i>Saga Sea</i>	18/7–13/8/07	48.3			
<i>Saga Sea</i>	12/3–21/6/07	48.1, 48.2			
<i>Saga Sea</i>	16/8–28/8/07	48.3			
<i>Niitaka Maru</i>	12/3–21/6/07	48.3			
<i>Dalmor II</i>	12/8–31/8/07	48.3			

Table 11: Seabird mortality totals and rates (BPT: birds/trawl) and species composition, recorded by observers in the CAMLR Convention Area trawl fishery during the 2006/07 season. DIC – grey-headed albatross; DIM – black-browed albatross; PRO – white-chinned petrel; DAC – Cape petrel.

Subarea/ division	Vessel (target species)	Cruise dates	Trawls		BPT	Dead				Total dead	Alive (combined)
			Set	Observed		DIC	DIM	PRO	DAC		
48.1, 48.2	<i>Saga Sea</i> (KRI)	10/12–6/3/07	131	67	0.00					0	0
	<i>Saga Sea</i> (KRI)	12/3–21/6/07	525	351	0.00					0	2
	Total		656	418	0.00					0	2
48.3	<i>Insung Ho</i> (ANI)	21/1–24/1/07	21	20	0.20	1		3		4	2
	<i>New Polar</i> (ANI)	8/1–31/1/07	31	28	0.00					0	1
	<i>Robin M Lee</i> (ANI)	5/1–18/1/07	38	36	0.00					0	0
	<i>Dongsan Ho</i> (ANI)	9/1–14/1/07	12	7	0.29		2			2	0
	Total		102	91	0.07	1	2	3		6	3
48.3	<i>Saga Sea</i> (KRI)	18/7–13/8/07	276	57	0.00					0	0
	<i>Saga Sea</i> (KRI)	16/8–28/8/07	19	12	0.00					0	0
	<i>Niitaka Maru</i> (KRI)	12/3–21/6/07	157	48	0.00					0	0
	<i>Dalmor II</i> (KRI)	12/8–31/8/07	128	77	0.00					0	0
	Total		580	194	0.00					0	0
58.5.2	<i>Southern Champion</i> (ANI/TOP)	20/4–19/0/07	233	231	0.00					0	0
	<i>Southern Champion</i> (ANI/TOP)	2/2–4/3/07	225	213	0.00					0	0
	<i>Southern Champion</i> (ANI/TOP)	12/6–7/8/07	547	492	<0.01				2	2	0
	Total		1005	936	<0.01				2	2	0

Table 12: Seabird mortality totals and rates (BPT: birds/trawl) and species composition of by-catch, recorded by observers in the CAMLR Convention Area trawl fisheries over the last six seasons. DIC – grey-headed albatross; DIM – black-browed albatross; PRO – white-chinned petrel; PWD – Antarctic prion; PTZ – unknown petrel; DAC – Cape petrel; MAI – southern giant petrel; MAH – northern giant petrel.

Season	Area	Target species	Trips observed	Trawls			BPT	Dead							Total dead	Alive	
				Set	Observed	(%)		DIC	DIM	PRO	MAH	PWD	PTZ	DAC			MAI
2001/02	48.3	<i>E. superba</i>	5	992	755	76	<0.10									0	0
	48.3	<i>C. gunnari</i>	5	460	431	94	0.16		18	49		1				68	52
	58.5.2	<i>D. eleginoides</i> <i>C. gunnari</i>	6	904	850	94	<0.10									0	1
2002/03	48.3	<i>E. superba</i>	6	1928	1073	56										0	0
	48.3	<i>C. gunnari</i>	3	184	182	99	0.20	1	7	28						36	15
	58.5.2	<i>D. eleginoides</i> <i>C. gunnari</i>	8	1311	1309	100	<0.105		2	2				2		6	11
2003/04	48	<i>E. superba</i>	1	334	258	77	<0.10									0	0
	48.3	<i>E. superba</i>	6	1145	829	72	<0.10									0	0
	48.3	<i>C. gunnari</i>	6	247	238	96	0.37	1	26	59					1	87	132
	58.5.2	<i>D. eleginoides</i> <i>C. gunnari</i>	5	1218	1215	100	<0.10									0	13
2004/05	48.2	<i>E. superba</i>	2	391	285	73	<0.10								1	1	0
	48.3	<i>C. gunnari</i>	7	337	277	82	<0.14		9	1	1					11	14
	48.3	<i>E. superba</i>	5	1451	842	58	<0.10									0	0
	58.5.2	<i>D. eleginoides</i> <i>C. gunnari</i>	6	1303	1301	100	<0.11		5	3						8	0
2005/06	48.1	<i>E. superba</i>	2	1127	839	74	0.00									0	0
	48.3	<i>C. gunnari</i>	5	585	457	78	0.07	1	11	20			1			33	89
	48.3	<i>E. superba</i>	2	395	181	46	0.00									0	0
	58.5.2	<i>D. eleginoides</i> <i>C. gunnari</i>	3	1086	1086	100	0.00									0	0
2006/07	48.1/2	<i>E. superba</i>	2	656	418	64	0.00									0	2
	48.3	<i>C. gunnari</i>	4	102	91	89	0.07	1	2	3						6	3
	48.3	<i>E. superba</i>	4	580	194	33	0.00									0	0
	58.5.2	<i>D. eleginoides</i> <i>C. gunnari</i>	3	1005	936	93	<0.01								2	2	0

Table 13: Seal mortality totals and rates (SPT: seals/trawl) and species composition, recorded by observers in the CAMLR Convention Area trawl fishery during the 2006/07 season. SLP – leopard seal; SEA – Antarctic fur seal.

Subarea/ division	Vessel (target species)	Cruise dates	Trawls		SPT	Dead		Total dead	Alive (combined)
			Set	Observed		SLP	SEA		
48.1, 48.2	<i>Saga Sea</i> (KRI)	10/12–6/3/07	131	67	0.00			0	0
	<i>Saga Sea</i> (KRI)	12/3–21/6/07	525	351	0.00			0	0
	Total		656	418	0.00			0	0
48.3	<i>Insung Ho</i> (ANI)	21/1–24/1/07	21	20	0.00			0	0
	<i>New Polar</i> (ANI)	8/1–31/1/07	31	28	0.00			0	0
	<i>Robin M Lee</i> (ANI)	5/1–18/1/07	38	36	0.00			0	0
	<i>Dongsan Ho</i> (ANI)	9/1–14/1/07	12	7	0.00			0	0
	Total		102	91	0.00			0	0
48.3	<i>Saga Sea</i> (KRI)	18/7–13/8/07	276	57	0.00			0	0
	<i>Saga Sea</i> (KRI)	16/8–28/8/07	19	12	0.00			0	0
	<i>Niitaka Maru</i> (KRI)	12/3–21/6/07	157	48	0.00			0	0
	<i>Dalmor II</i> (KRI)	12/8–31/8/07	128	77	0.00			0	0
	Total		580	194	0.00			0	0
58.5.2	<i>Southern Champion</i> (ANI/TOP)	20/4–19/5/07	233	231	0.00			0	0
	<i>Southern Champion</i> (ANI/TOP)	2/2–4/3/07	225	213	0.00			0	0
	<i>Southern Champion</i> (ANI/TOP)	12/6–7/8/07	547	492	0.00			0	0
	Total		1005	936	0.00			0	0

Table 14: Seal mortality totals and rates (SPT: seals/trawl) and species composition of by-catch, recorded by observers in the CAMLR Convention Area trawl fisheries over the last seven seasons. SLP – leopard seal; SEA – Antarctic fur seal; SES – southern elephant seal.

Season	Area	Target species	Trips observed	Trawls		SPT	Dead			Total dead	Alive (combined)
				Set	Observed		SLP	SEA	SES		
2000/01	48.1	<i>E. superba</i>	2	485	427	0.00				0	0
	48.3	<i>C. gunnari</i>	6	381	350	0.00				0	0
	58.5.2	<i>D. eleginoides</i> <i>C. gunnari</i>	7	1441	1387	0.001		1		1	2
2001/02	48.3	<i>E. superba</i>	5	992	755	0.00				0	0
	48.3	<i>C. gunnari</i>	5	460	431	0.00				0	0
	58.5.2	<i>D. eleginoides</i> <i>C. gunnari</i>	6	904	850	0.001		1		1	0
2002/03	48.3	<i>E. superba</i>	6	1928	1073	0.03		27		27	15
	48.3	<i>C. gunnari</i>	3	184	182	0.00				0	0
	58.5.2	<i>D. eleginoides</i> <i>C. gunnari</i>	8	1311	1309	0.003		2	2	4	2
2003/04	48	<i>E. superba</i>	1	334	258	0		0		0	0
	48.3	<i>E. superba</i>	6	1145	829	0.17		142		142	12
	48.3	<i>C. gunnari</i>	6	247	238	0				0	0
	58.5.2	<i>D. eleginoides</i> <i>C. gunnari</i>	5	1218	1215	0.002		3		3	0
2004/05	48.2	<i>E. superba</i>	2	391	285	0.06		16		16	8
	48.3	<i>C. gunnari</i>	7	337	277	0.00		0		0	2
	48.3	<i>E. superba</i>	5	1451	842	0.006		5		5	64
	58.5.2	<i>D. eleginoides</i> <i>C. gunnari</i>	6	1303	1301	0.00				0	1
2005/06	48.1	<i>E. superba</i>	2	1127	839	0.001		1		1	0
	48.3	<i>C. gunnari</i>	5	585	457	0.00				0	0
	48.3	<i>E. superba</i>	2	395	181	0.00				0	0
	58.5.2	<i>D. eleginoides</i> <i>C. gunnari</i>	3	1086	1086	0.00	1			1	0
2006/07	48.1/2	<i>E. superba</i>	2	656	418	0.00				0	0
	48.3	<i>C. gunnari</i>	4	102	91	0.00				0	0
	48.3	<i>E. superba</i>	4	580	194	0.00				0	0
	58.5.2	<i>D. eleginoides</i> <i>C. gunnari</i>	3	1005	936	0.00				0	0

Table 15: Compliance, as reported by observers, of streamer lines with the minimum specifications set out in Conservation Measure 25-02 (2005) during the 2006/07 season. Sp – Spanish method; A – autoliner; Y – yes; N – no; -- no information; MP – Moon pool; * – conservation measure not applicable in this area.

Vessel name (Nationality)	Dates of fishing	Fishing method	Compliance with CCAMLR specifications	Compliance with details of streamer line specifications				Length of streamers (m)	Streamer line in use % setting		Haul searing device used %
				Attachment height above water (m)	Total length (m)	No. of streamers per line	Spacing of streamers per line (m)		Night	Day	
Subarea 48.3											
<i>Antarctic Bay</i>	12/6–23/8/07	Sp	Y	Y (8)	Y (150)	7	Y (5)	Y (7)	100		100
<i>Argos Frøyanes</i>	9/5–24/8/07	A	Y	Y (7)	Y (150)	16	Y (5)	Y (8)	100		100
<i>Argos Georgia</i>	1/5–24/8/07	A	Y	Y (7.3)	Y (155)	13	Y (5)	Y (1–8)	100		100
<i>Argos Helena</i>	1/5–24/8/07	A	Y	Y (7.3)	Y (154)	13	Y (5)	Y (1–8)	100		MP
<i>Insung No. 22</i>	13/5–6/7/07	Sp	Y	Y (7)	Y (150)	8	Y (5)	Y (6.8)	100		87
<i>Jacqueline</i>	1/5–4/8/07	Sp	N	Y (7.6)	Y (154)	7	Y (5)	N (1–6)	100		100
<i>Koryo Maru No. 11</i>	3/5–15/8/07	Sp	Y	Y (8)	Y (174)	10	Y (5)	Y (8.5)	100		100
<i>Punta Ballena</i>	1/5–17/7/07	A	Y	Y (7)	Y (150)	7	Y (5)	Y (7)	100		100
<i>San Aspiring</i>	1/5–20/8/07	A	Y	Y (8.2)	Y (213)	24	Y (5)	Y (9.6)	100		100
<i>Viking Bay</i>	1/5–24/8/07	Sp	Y	Y (7)	Y (150)	9	Y (5)	Y (5–6.5)	100		100
Subarea 48.4											
<i>San Aspiring</i>	7/4–15/4/07	A	Y	Y (8.2)	Y (213)	24	Y (5)	Y (9.6)	100		100*
Subarea 48.6											
<i>Frøyanes</i>	21/3–2/4/07	A	Y	Y (7.1)	Y (150)	9	Y (5)	Y (3–7)	100	100	0*
<i>Shinsei Maru No. 3</i>	29/3–29/6/07	A	Y	Y (7.5)	Y (152)	6	Y (5)	Y (4.5–7)	100	100	99*
Divisions 58.4.1, 58.4.2, 58.4.3a, 58.4.3b											
<i>Tronio</i>	1/12–22/3/07	Sp	Y	Y (7.2)	Y (160)	12	Y (5)	Y (1–6.5)		100	95*
<i>Antillas Reefer</i>	1/1–28/3/07	Sp	N	Y (7)	N (100)	9	Y (5)	Y (1–6.5)	100	100	0*
<i>Paloma V</i>	1/12–22/3/07	Sp	Y	Y (7)	Y (154)	12	Y (5)	Y (1–6.5)	100	100	0*
<i>Insung No. 1</i>	18/12–7/3/07	Sp	N	Y (7)	Y (150)	10	Y (5)	N (1–4.5)	100	100	100*
<i>Shinsei Maru No. 3</i>	31/12–4/3/07	A	N	Y (10)	Y (160)	6	N (5.4)	Y (5–7.2)	100	100	85*
<i>Jung Woo No. 2¹</i>	28/2–29/3/07	Sp	Y	Y (7.8)	Y (150)	10	Y (5)	Y (1–6.5)	100	100	100*
Division 58.5.2											
<i>Janas</i>	27/4–18/6/07	A	Y	Y (7)	Y (170)	17	Y (4)	Y (1.2–7)	100		100
<i>Janas</i>	15/7–3/9/07	A	Y	Y (7)	Y (175)	13	Y (5)	Y (1.2–7)	100	100	100
Subareas 58.6, 58.7											
<i>Koryo Maru No. 11</i>	10/2–30/3/07	Sp	Y	Y (8.2)	Y (150)	10	Y (4.6)	Y (10)	100		100
<i>Ross Mar</i>	25/7–24/8/07	A	Y	Y (7.2)	Y (150)	14	Y (5)	Y (1–6.6)	100		0
<i>Ross Mar</i>	24/4–12/6/07	A	Y	Y (8)	Y (150)	20	Y (5)	Y (8)	100	100	0

(continued)

Table 15 (continued)

Vessel name (Nationality)	Dates of fishing	Fishing method	Compliance with CCAMLR specifications	Compliance with details of streamer line specifications				Length of streamers (m)	Streamer line in use % setting		Haul scaring device used %
				Attachment height above water (m)	Total length (m)	No. of streamers per line	Spacing of streamers per line (m)		Night	Day	
Subareas 88.1, 88.2											
<i>Avro Chieftain</i>	4/12–6/2/07	A	Y	Y (7.5)	Y (160)	38	Y (2.5)	Y (1–85)		100	MP*
<i>Insung No. 22</i>	8/12–1/2/07	Sp	Y	Y (7.5)	Y (200)	40	Y (4)	Y (0.5–6.7)		100	0*
<i>Janas</i>	4/12–5/2/07	A	Y	Y (7)	Y (170)	17	Y (4)	Y (1–8.6)	100	100	0*
<i>Jung Woo No. 2</i>	11/12–1/2/07	Sp	Y	Y (7.8)	Y (150)	10	Y (5)	Y (1–6.5)		100	100*
<i>Ross Mar</i>	31/12–1/2/07	A	Y	Y (7.7)	Y (160)	10	Y (5)	Y (6.5)		100	0*
<i>Ross Star</i>	3/1–2/2/07	A	Y	Y (8.3)	Y (150)	6	Y (5)	Y (1–6.5)		100	0*
<i>San Aotea II</i>	1/12–6/2/07	A	Y	Y (7.7)	Y (213)	11	Y (4.7)	Y (1–8)		100	0*
<i>San Aspiring</i>	1/12–1/2/07	A	Y	Y (8)	Y (250)	22	Y (4.7)	Y (1–9.2)		100	0*
<i>Antartic II</i>	2/12–11/2/07	A	Y	Y (7)	Y (150)	27	Y (4.8)	Y (7.2)		100	0*
<i>Argos Georgia</i>	1/12–8/2/07	A	Y	Y (7.6)	Y (155)	7	Y (5)	-	100	100	0*
<i>Argos Helena</i>	2/12–14/2/07	A	Y	Y (8.4)	Y (165)	13	Y (5)	Y (1–8.4)	100	100	MP*
<i>Frøyanes</i>	1/12–15/2/07	A	Y	Y (7)	Y (150)	16	Y (4.7)	Y (1–7)		100	0*
<i>Viking Sur</i>	4/1–14/2/07	A	N	Y (7.7)	Y (151)	6	Y (4.8)	N (2.5–6)		100	0*
<i>Volna</i>	29/12–2/3/07	Sp	Y	Y (7)	Y (150)	8	Y (5)	Y (1–6.5)		100	0*
<i>Yantar</i>	29/12–1/3/07	Sp	Y	Y (7)	Y (150)	7	Y (5)	Y (1–6.5)		100	0*

¹ *Jung Woo No. 2* also conducted a small amount of fishing in Subarea 48.6 during this cruise.

Table 16: Summary of scientific observations relating to compliance with Conservation Measure 25-02 (2005), based on data from scientific observers from the 1996/97 to the 2006/07 seasons. Values in parentheses are % of observer records that were complete. na – not applicable.

Subarea/season	Line weighting (Spanish system only)			Night setting (% night)	Offal discharge (%) opposite haul	Streamer line compliance (%)					Total catch rate (birds/thousand hooks)						
	Compliance %	Median weight (kg)	Median spacing (m)			Overall	Attached height	Total length	No. of streamers	Distance apart	Night	Day					
Subarea 48.3																	
1996/97	0 (91)	5.0	45	81	0 (91)	6 (94)	47 (83)	24 (94)	76 (94)	100 (78)	0.18	0.93					
1997/98	0 (100)	6.0	42.5	90	31 (100)	13 (100)	64 (93)	33 (100)	100 (93)	100 (93)	0.03	0.04					
1998/99	5 (100)	6.0	43.2	80 ¹	71 (100)	0 (95)	84 (90)	26 (90)	76 (81)	94 (86)	0.01	0.08 ¹					
1999/00	1 (91)	6.0	44	92	76 (100)	31 (94)	100 (65)	25 (71)	100 (65)	85 (76)	<0.01	<0.01					
2000/01	21 (95)	6.8	41	95	95 (95)	50 (85)	88 (90)	53 (94)	94 (94)	82 (94)	<0.01	<0.01					
2001/02	63 (100)	8.6	40	99	100 (100)	87 (100)	94 (100)	93 (100)	100 (100)	100 (100)	0.002	0					
2002/03	100 (100)	9.0	39	98	100 (100)	87 (100)	91 (100)	96 (100)	100 (100)	100 (100)	<0.001	0					
2003/04	87 (100)	9.0	40	98	100 (100)	69 (94)	88 (100)	93 (94)	7	100 (100)	0.001	0					
2004/05	100 (100)	9.5	45	99	100 (100)	75 (100)	88 (100)	88 (100)	7	100 (100)	0.001	0					
2005/06	100 (100)	10.0	40	100	100 (100)	100 (100)	100 (100)	100 (100)	7	100 (100)	0	0					
2006/07	100 (100)	9.8	39	100	100 (100)	90 (100)	100 (100)	100 (100)	7	90 (100)	0	0					
Subarea 48.4																	
2005/06	Auto only	na	na	100	100 (100)	100 (100)	100 (100)	100 (100)	100 (100)	7	100 (100)	0	0				
2006/07	Auto only	na	na	100	100 (100)	100 (100)	100 (100)	100 (100)	100 (100)	7	100 (100)	0	0				
Subarea 48.6																	
2003/04	100 (100)	7.0	20	41 ⁶	No discharge	0 (100)	100 (100)	100 (100)	7	0 (100)	0	0					
2004/05	100 (100)	6.5	19.5	29 ⁶	No discharge	100 (100)	100 (100)	100 (100)	7	0 (100)	0	0					
2005/06	Auto only	na	na	36 ⁶	No discharge	50 (100)	100 (100)	50 (100)	7	100 (100)	0	0					
2006/07	Auto only	na	na	44 ⁶	No discharge	100 (100)	100 (100)	100 (100)	7	100 (100)	0	0					
Divisions 58.4.1, 58.4.2, 58.4.3a, 58.4.3b																	
2002/03	Auto only	na	na	24 ⁵	No discharge	100 (100)	100 (100)	100 (100)	7	100 (100)	0	0					
2003/04	Auto only	na	na	0 ⁵	No discharge	100 (100)	100 (100)	100 (100)	7	100 (100)	0	0					
2004/05	33 ⁹ (100)	7.9	40	26 ⁵	No discharge	88 (100)	100 (100)	100 (100)	7	88 (100)	0	<0.001					
2005/06	16 ⁹ (100)	7.2	48	16 ⁵	No discharge	100 (100)	100 (100)	100 (100)	7	100 (100)	0	<0.001					
2006/07	20 ⁹ (100)	7.7	40	10 ⁵	4% by 1 vessel ¹⁰	50 (100)	100 (100)	83 (100)	7	83 (100)	0	0					
Division 58.4.4																	
1999/00	0 ⁹ (100)	5	45	50	0 (100)	0 (100)	100 (100)	0 (100)	100 (100)	100 (100)	0	0					
Division 58.5.2																	
2002/03	Auto only	na	na	100	No discharge	100 (100)	100 (100)	100 (100)	7	100 (100)	0	0					
2003/04	Auto only	na	na	99	No discharge	100 (100)	100 (100)	100 (100)	7	100 (100)	0	0					
2004/05	Auto only	na	na	50 ⁸	No discharge	100 (100)	100 (100)	100 (100)	7	100 (100)	0	0					
2005/06	Auto only	na	na	53 ⁸	No discharge	100 (100)	100 (100)	100 (100)	7	100 (100)	0	0					
2006/07	Auto only	na	na	54 ⁸	No discharge	100 (100)	100 (100)	100 (100)	7	100 (100)	0	0					

(continued)

Table 16 (continued)

Subarea/season	Line weighting (Spanish system only)			Night setting (% night)	Offal discharge (%) opposite haul	Streamer line compliance (%)					Total catch rate (birds/thousand hooks)						
	Compliance %	Median weight (kg)	Median spacing (m)			Overall	Attached height	Total length	No. of streamers	Distance apart	Night	Day					
Subareas 58.6, 58.7																	
1996/97	0 (60)	6	35	52	69 (87)	10 (66)	100 (60)	10 (66)	90 (66)	60 (66)	0.52	0.39					
1997/98	0 (100)	6	55	93	87 (94)	9 (92)	91 (92)	11 (75)	100 (75)	90 (83)	0.08	0.11					
1998/99	0 (100)	8	50	84 ²	100 (89)	0 (100)	100 (90)	10 (100)	100 (90)	100 (90)	0.05	0					
1999/00	0 (83)	6	88	72	100 (93)	8 (100)	91 (92)	0 (92)	100 (92)	91 (92)	0.03	0.01					
2000/01	18 (100)	5.8	40	78	100 (100)	64 (100)	100 (100)	64 (100)	100 (100)	100 (100)	0.01	0.04					
2001/02	66 (100)	6.6	40	99	100 (100)	100 (100)	100 (100)	100 (100)	100 (100)	100 (100)	0	0					
2002/03	0 (100)	6.0	41	98	50 (100)	100 (100)	100 (100)	100 (100)	100 (100)	100 (100)	<0.01	0					
2003/04	100 (100)	7.0	20	83	100 (100)	50 (100)	50 (100)	100 (100)	⁷	100 (100)	0.03	0.01					
2004/05	100 (100)	6.5	20	100	100 (100)	0 (100)	100 (100)	100 (100)	⁷	0 (100)	0.149	0					
2005/06	100 (100)	9.1	40	100	100 (100)	0 (100)	100 (100)	100 (100)	⁷	0 (100)	0	0					
2006/07	100 (100)	10.4	40	100	100 (100)	0 (100)	100 (100)	100 (100)	⁷	0 (100)	0	0					
Subareas 88.1, 88.2																	
1996/97	Auto only	na	na	50	0 (100)	100 (100)	100 (100)	100 (100)	100 (100)	100 (100)	0	0					
1997/98	Auto only	na	na	71	0 (100)	100 (100)	100 (100)	100 (100)	100 (100)	100 (100)	0	0					
1998/99	Auto only	na	na	1 ³	100 (100)	100 (100)	100 (100)	100 (100)	100 (100)	100 (100)	0	0					
1999/00	Auto only	na	na	6 ⁴	No discharge	67 (100)	100 (100)	67 (100)	100 (100)	100 (100)	0	0					
2000/01	1 (100)	12	40	18 ⁴	No discharge	100 (100)	100 (100)	100 (100)	100 (100)	100 (100)	0	0					
2001/02	Auto only	na	na	33 ⁴	No discharge	100 (100)	100 (100)	100 (100)	100 (100)	100 (100)	0	0					
2002/03	100 (100)	9.6	41	21 ⁴	1 incidence by 1 vessel	100 (100)	100 (100)	100 (100)	100 (100)	100 (100)	0	0					
2003/04	89 (100)	9	40	5 ⁴	24% by 1 vessel	59 (100)	82 (100)	86 (100)	⁷	100 (100)	0	<0.01					
2004/05	33 ⁹ (100)	9.0	45	1 ⁴	1% by 1 vessel	64 (100)	100 (100)	100 (100)	⁷	64 (100)	0	0					
2005/06	100 ⁹ (100)	9.2	35	1 ⁴	No discharge	85 (92)	100 (92)	85 (92)	⁷	100 (92)	0	0					
2006/07	100 ⁹ (100)	10	36	4 ⁴	1% by 1 vessel	93 (100)	100 (100)	100 (100)	⁷	93 (93)	0	0					

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

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

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

⁴ Conservation Measures 210/XIX, 216/XX and 41-09 (2002, 2003, 2004) permit daytime setting south of 65°S in Subarea 88.1 if able to demonstrate a sink rate of 0.3 m s⁻¹.

⁵ Conservation Measure 41-05 (2002, 2003, 2004) permits daytime setting in Division 58.4.2 if the vessel can demonstrate a sink rate of 0.3 m s⁻¹.

⁶ Conservation Measure 41-04 (2003, 2004) permits daytime setting in Subarea 48.6 if the vessel can demonstrate a sink rate of 0.3 m s⁻¹.

⁷ Conservation Measure 25-02 (2003) was updated and the requirement for a minimum of 5 streamers per line was removed.

⁸ Conservation Measure 41-08 (2004) permits daylight setting with the use of an integrated weighted line of at least 50 g m⁻¹.

⁹ Conservation Measure 24-02 (2004) exempts vessels from line weighting requirements if they comply with sink rates or have an UWL of 50 g m⁻¹.

¹⁰ The *Tronio* discharged offal on seven occasions due to mechanical problems.

Table 17: Sink rates recorded by observers using bottle tests and TDRs in Subareas 48.6, 88.1 and 88.2 and Divisions 58.4.1, 58.4.2, 58.4.3a and 58.4.3b during the 2006/07 season.

Vessel name	Subarea/ division	No. of tests conducted	Sink rate				Line weights	
			Min.	Max.	Average (m/second)	Standard deviation	kg m ⁻¹	IWL g m ⁻¹
<i>Frøyanes*</i>	48.6	13	0.29	0.37	0.32	0.03		50
<i>Shinsei Maru No. 3</i>	48.6	103	0.48	0.88	0.65	0.07	11 / 50	
<i>Tronio</i>	58.4.1/3a/3b	92	0.26	1.00	0.42	0.09	7.7 / 40	
<i>Antillas Reefer*</i>	58.4.1/2/3b	20	0.37	0.50	0.43	0.04	8 / 40	130
<i>Paloma V</i>	58.4.1/3b	116	0.40	1.00	0.69	0.10	7 / 108	
<i>Insung No. 1*</i>	58.4.1/2	46	0.32	0.40	0.36	0.03	5 / 40	200
<i>Shinsei Maru No. 3</i>	58.4.3a/3b	84	0.56	0.84	0.68	0.06	11 / 50	
<i>Jung Woo No. 2</i>	58.4.2	34	0.34	0.56	0.41	0.05	14 / 37	
<i>Avro Chieftain*</i>	88.1	123	0.21	0.67	0.27	0.05		50
<i>Insung No. 22</i>	88.1	28	0.31	0.43	0.37	0.03	10 / 69	
<i>Janas*</i>	88.1	57	0.21	0.71	0.34	0.09		50
<i>Jung Woo No. 2</i>	88.1	32	0.33	0.67	0.43	0.08	14 / 37	
<i>Ross Mar*</i>	88.1	41	0.24	0.56	0.42	0.08		140
<i>Ross Star*</i>	88.1	28	0.23	0.63	0.37	0.08		50
<i>San Aotea II*</i>	88.1	58	0.12	0.77	0.30	0.10		50
<i>San Aspiring*</i>	88.1	63	0.21	1.06	0.36	0.10		50
<i>Antartic II*</i>	88.1, 88.2	11	0.43	1.25	0.80	0.30	13.6 / 540	56
<i>Argos Georgia*</i>	88.1, 88.2	6	0.24	0.31	0.28	0.02		50
<i>Argos Helena*</i>	88.1, 88.2	57	0.23	0.48	0.26	0.03		50
<i>Frøyanes*</i>	88.1, 88.2	89	0.22	0.53	0.32	0.05		50
<i>Viking Sur*</i>	88.1, 88.2	40	0.20	0.83	0.39	0.10		50
<i>Volna</i>	88.1, 88.2	12	0.34	0.48	0.40	0.05	10 / 35	
<i>Yantar</i>	88.1, 88.2	20	0.91	1.43	1.20	0.20	9.8 / 20	

* Vessels operated with an IWL of at least 50 g m⁻¹.

Table 18: Estimated total potential seabird by-catch in unregulated longline fisheries in the Convention Area from 1996 to 2007.

Subarea/ division	Year	Estimated total potential seabird by-catch		
		Lower	Median	Upper
48.3	2007	0	0	0
	1996–2006	1 835	3 486	56 766
58.4.2	2007	509	621	1 658
	1996–2006	972	1 186	3 165
58.4.3	2007	2 981	3 637	9 711
	1996–2006	4 568	5 573	14 882
58.4.4	2007	2 056	2 509	6 699
	1996–2006	3 886	4 741	12 659
58.5.1	2007	1 184	1 445	3 858
	1996–2006	48 781	59 518	158 920
58.5.2	2007	0	0	0
	1996–2006	32 763	39 976	106 739
58.6	2007	0	0	0
	1996–2006	45 029	54 941	146 697
58.7	2007	0	0	0
	1996–2006	12 856	15 686	41 884
88.1	2007	0	0	0
	1996–2006	489	598	1 578
88.2	2007	0	0	0
	1996–2006	9	11	28
Totals	2007	6 730	8 212	21 926
	1996–2006	151 187	185 716	543 319
Total		157 917	193 927	565 245

Table 19: Summary of IMAF assessment of risk posed to seabirds from net entanglements in pelagic finfish trawl fisheries in the Convention Area (see also Figure 2).

Risk level ¹	Mitigation requirements	Recommended observer coverage
1 – low	<ul style="list-style-type: none"> • Strict compliance with standard seabird by-catch conservation measure². • Vessels that catch a total of three birds in any season shall consider the use of net binding to reduce seabird captures during shooting operations. • No offal discharge during the shooting and hauling of trawl gear. Full offal retention where possible. 	<p>20% of sets 50% of hauls</p>
2 – average to low	<ul style="list-style-type: none"> • Strict compliance with standard seabird by-catch conservation measure². • Vessels that catch a total of three birds in any season shall consider the use of net binding to reduce seabird captures during shooting operations. • No offal discharge during the shooting and hauling of trawl gear. Full offal retention where possible. 	<p>25% of sets 75% of hauls</p>
3 – average	<ul style="list-style-type: none"> • Strict compliance with standard seabird by-catch conservation measure². • Vessels that catch a total of three birds in any season shall consider the use of net binding to reduce seabird captures during shooting operations. • No offal discharge during the shooting and hauling of trawl gear. Full offal retention where possible. 	<p>40% of sets 90% of hauls</p>
4 – average to high	<ul style="list-style-type: none"> • Strict compliance with standard seabird by-catch conservation measure². • Vessels that catch a total of three birds in any season shall use net binding, and consider adding weight to the cod end to reduce seabird captures during shooting operations. • No offal discharge during the shooting and hauling of trawl gear. Full offal retention where possible. 	<p>45% of sets 90% of hauls</p>
5 – high	<ul style="list-style-type: none"> • Strict compliance with standard seabird by-catch conservation measure². • Use net binding, and consider adding weight to the cod end to reduce seabird captures during shooting operations. • No offal discharge during the shooting and hauling of trawl gear. Full offal retention where possible. 	<p>50% of sets 90% of hauls</p>

¹ Where ‘risk’ means seabird by-catch risk if no mitigation is used for a given level of seabird abundance.

² Conservation Measure 25-03.

Table 20: Summary of IMAF assessment of risk to seabirds posed by longline fisheries in the Convention Area (see also Figure 2).

Risk level	Mitigation requirements	Observer coverage
1 – low	<ul style="list-style-type: none"> • Strict compliance with standard seabird by-catch conservation measure¹. • No need for restriction of longline fishing season. • Daytime setting permitted subject to line sink rate requirement². • No offal dumping. 	20% of hooks hauled 50% of hooks set
2 – average to low	<ul style="list-style-type: none"> • Strict compliance with standard seabird by-catch conservation measure¹. • No need for restriction of longline fishing season. • Daytime setting permitted subject to line sink rate requirements and seabird by-catch limits. • No offal dumping. 	25% of hooks hauled 75% of hooks set
3 – average	<ul style="list-style-type: none"> • Strict compliance with standard seabird by-catch conservation measure¹. • Restrict longline fishing to period outside at-risk species breeding season where known/relevant unless line sink rate requirement is met at all times. • Daytime setting permitted subject to strict line sink rate requirements and seabird by-catch limits. • No offal dumping. 	40% of hooks hauled ² 95% of hooks set
4 – average to high	<ul style="list-style-type: none"> • Strict compliance with standard seabird by-catch conservation measure¹. • Restrict longline fishing to the period outside any at risk species breeding season(s). • Strict line sink rate requirements at all times. • No daytime setting permitted. • No offal dumping. 	45% of hooks hauled ² 95% of hooks set
5 – high	<ul style="list-style-type: none"> • Strict compliance with standard seabird by-catch conservation measure¹. • Restrict longline fishing to period outside at-risk species breeding season. • Closed areas as identified. • Strict line sink rate requirements at all times. • No daytime setting permitted. • Strict seabird by-catch limits in place. • No offal dumping. 	50% of hooks hauled ² 100% of hooks set

¹ Conservation Measure 25-02 with the possibility of exemption to paragraph 4 as provided by Conservation Measure 24-02.

² This is likely to require the presence of two observers.

Table 21: Intersessional work plan for ad hoc WG-IMAF for 2007/08.

The Secretariat will coordinate the intersessional work of the IMAF group. An interim review of work will be conducted in May 2008 and advised to ad hoc WG-IMAF in advance of WG-EMM/WG-SAM (July 2008). The outcome of the intersessional work will be reviewed in September 2008 and reported as a tabled paper to WG-IMAF in October 2008.

¹ In addition to work coordinated by the Science Officer (Secretariat) * SODA: Scientific Observer Data Analyst

	Task/Topic	Paragraphs of WG-IMAF report	Members' Assistance ¹	Start/Completion deadlines	Action
1.	Planning and coordination of work:				
1.1	Circulate materials on IMAF matters as contained in reports of current meetings of CCAMLR.	Standing request		Dec 2007	Place all relevant sections of CCAMLR-XXVI on IMAF page of CCAMLR website and notify IMAF group members, and technical coordinators and (via them) scientific observers.
1.2	Acknowledge work of technical coordinators and scientific observers.	Standing request		Dec 2007	Commend technical coordinators and all observers for their efforts in the 2006/07 fishing season.
1.3	Prepare agenda for WG-IMAF-08.		Science Officer, Co-conveners	Feb 2008/ Jul 2008	Science Officer to forward e-version of last year's annotated agenda to Co-conveners for revision prior to distribution to WG-IMAF for comments on revised structure, final version to be circulated later in year.
1.4	Submission of papers for WG-IMAF-08.		Members, IMAF members, SODA	By 0900 29 Sep 2008	Submit papers specifically relevant to agenda items.
1.5	Allocation of submitted papers to agenda items and assignment of rapporteur tasks.	Standing request	Co-conveners	Before meeting	Prepare list, circulate to confirmed attendees and post on website.
1.6	WG-IMAF Planning Workshop	II.208–211	Science Officer, SODA, Co-conveners	May 2008 15 Sep 2008 10 Oct 2008	Develop agenda, plan venue, invite participants. Draft and distribute working papers for workshop. Convene one-day workshop in week preceding WG-IMAF-08.

	Task/Topic	Paragraphs of WG-IMAF report	Members' Assistance ¹	Start/ Completion deadlines	Action
2.	Members' research and development activities:				
2.1	Request Members provide updated information on national research programs on albatrosses, giant petrels and white-chinned petrels to ACAP in relation to status and trends of populations and foraging range and distribution, genetic profiles and the numbers and nature of by-catch specimens and samples.	Standing request	Members, IMAF members, technical coordinators, nominated scientists	Nov 2007/ Sep 2008	Explicit reminder to IMAF members in March 2008.
2.2	Risk assessment of seabird by-catch in the Convention Area.	Standing request	IMAF members	Nov 2007/ Sep 2008	Further work as appropriate to update SC-CAMLR-XXVI/BG/31 for the Scientific Committee. Circulate any new tabled papers relating to seabird at-sea distributions to Co-conveners and Dr Gales – and to other IMAF members as requested.
2.3	Distribute Waugh et al. paper describing CCAMLR's seabird risk assessment process.	I.52	Science Officer, Co-conveners	Dec 2007/ Feb 2008	Distribute paper to RFMOs, FAO. To WCPFC in time for its Dec 2007 Commission meeting.
2.4	Request BirdLife International to provide summary data on distribution of Southern Ocean seabirds from its tracking database if accumulation of data warrants. Plan with BirdLife for the three-year review of tracking database.	Standing request	Science Officer, BirdLife International, Co-conveners	Jul 2008	Request information. Circulate any new information to WG-IMAF. Co-conveners to liaise with BirdLife International with respect to three-year review.

	Task/Topic	Paragraphs of WG-IMAF report	Members' Assistance ¹	Start/ Completion deadlines	Action
2.5	<p>Information on the development and use of fisheries-related methods of the avoidance of incidental mortality of seabirds. In particular, information is sought on the following:</p> <ul style="list-style-type: none"> • experiences with trotline or trotline/net systems; • experiences with steel weights; • optimum configuration of line-weighting regimes and equipment; • haul mitigation devices and experiences with their use; • tests of/experiences with streamer lines, especially with respect to paired versus single lines; • trawl haul mitigation and the use of net binding; • review methodology for monitoring link sink rate using bottle tests; • determination of appropriate 'access windows' for Convention Area seabirds and fisheries. 	Standing request	Members, IMAF members, technical coordinators	Nov 2007/ Sep 2008	Request information, collate responses for WG-IMAF-08, members to submit papers where possible.
2.6	Produce and distribute a hook discard outreach poster.	I.3, I.39	Australia, SODA	Dec 2007/ Jan 2008	Secretariat distribute hook poster via technical coordinators to all longline vessels operating in the Convention Area.
2.7	Continued experimental trials of mitigation measures in French EEZ.	Standing request and I.9(i-ii)	France, IMAF scientists	As soon as reports available	Report available results to WG-IMAF-08, in particular details on the nature of seabird captures.
2.8	Submit a strategic plan to eliminate seabird mortality.	I.9(iv-v)	France	Sep 2008	See paragraph for details, also include description of the full set of regulatory instruments in place.
2.9	Submit publication of evaluation of the impact of fisheries on the populations of petrels in the French EEZs.	I.50	France		Submit English version for review by WG-IMAF-08.

	Task/Topic	Paragraphs of WG-IMAF report	Members' Assistance ¹	Start/ Completion deadlines	Action
2.10	Request data acquired from observer protocols for: seabird trawl warp strike observation and longline haul.	I.46(iv-v)	Drs S. Waugh and K. Sullivan, Mr E. Melvin, IMAF members	Aug 2008	Review data-to-date from protocols developed at WG-IMAF-06. Extract data in early August to allow paper to be drafted.
3.	Information from outside the Convention Area:				
3.1	Information on longline fishing effort in the Southern Ocean outside the Convention Area.	Standing request	Members, non-Contracting Parties, international organisations	Sep 2008	Request information intersessionally from those Members known to be licensing fishing vessels in areas adjacent to the CCAMLR Convention Area (e.g. Argentina, Australia, Brazil, Chile, New Zealand, South Africa, UK and Uruguay; review situation at WG-IMAF-08. Request information from other Parties – Members and non-Contracting Parties (e.g. China, Japan, Republic of Korea) and review at WG-IMAF-08.
3.2	Information on incidental mortality outside the Convention Area of seabirds breeding within the area.	Standing request and I.28	Members, IMAF members	Sep 2008	Repeat request to all IMAF members; review at WG-IMAF-08.
3.3	Reports on use and effectiveness of mitigation measures outside the Convention Area.	Standing request	Members, non-Contracting Parties, international organisations	Sep 2008	Request information on use/implementation of mitigating measures, especially provisions in Conservation Measures 24-02, 25-02 and 25-03, as under item 3.1 above; review responses at WG-IMAF-08.
4.	Cooperation with international organisations:				
4.1	Cooperation with CCSBT, IATTC, ICCAT, IOTC, SEAFO and WCPFC on specific issues regarding incidental mortality of seabirds. Implementation of CCAMLR Resolution 22/XXV.	Standing request and I.70	Co-conveners, Science Officer	Nov 2007/ Sep 2008	Brief CCAMLR observers on desired feedback on IMAF matters (seabird by-catch levels and mitigating measures).

	Task/Topic	Paragraphs of WG-IMAF report	Members' Assistance ¹	Start/ Completion deadlines	Action
4.2	Collaboration and interaction with all tuna commissions (CCSBT, IATTC, ICCAT, IOTC, SEAFO and WCPFC) and RFMOs with responsibility for fisheries in areas where Convention Area seabirds are killed. Implementation of CCAMLR Resolution 22/XXV.	II.194, II.195	Relevant Members, CCAMLR observers	Nov 2007 and at specific meetings	Request information on: (i) annual data on distribution level of longline fishing effort; (ii) existing data on levels and rates of seabird by-catch; (iii) measures currently in use and whether voluntary or mandatory; (iv) nature and coverage of observer program; (v) scientific information supporting proposed or adopted mitigation measures. Support regulations for use of proposed or adopted mitigating measures at least as effective as Conservation Measure 25-02.
4.3	Support for ACAP attendance at AC/MOP meetings.	Standing request	Members as appropriate; Australia		Support the work of the Advisory Committee, implementation of its Action Plan, and coordinating activities between CCAMLR and ACAP. Report to WG-IMAF-08.
4.4	IUCN Red List: Seabirds	Standing request	Science Officer	Aug 2008	Obtain from BirdLife International, circulate to IMAF members and table for SC-CAMLR-XXVII, any revisions to the conservation status of albatross, <i>Macronectes</i> and <i>Procellaria</i> species.
4.5	BirdLife International	Standing request	Science Officer, BirdLife International	Sep 2008	Request information from BirdLife International about its activities of relevance to IMAF, in particular its Seabird Program and 'Albatross Task Force'. BLI submission of updated report on RFMO evaluation to WG-IMAF-08.
4.6	Southern Seabird Solutions	Standing request	New Zealand	Sep 2008	Report on progress to WG-IMAF-08.
5.	Data acquisition and analysis:				
5.1	Acquisition from EEZs and elsewhere as appropriate, of seabird incidental mortality data for trawl fisheries.	Standing request	Members	Nov 2007/ Sep 2008	Request Members for appropriate data.

	Task/Topic	Paragraphs of WG-IMAF report	Members' Assistance ¹	Start/ Completion deadlines	Action
5.2	Acquisition of observer data in CCAMLR logbook format for French EEZs in Subarea 58.6 and Division 58.5.1.	I.8(iii)	France	Aug 2008	Request France to submit reports and data logbooks prepared by national observers for the current and past fishing seasons, using CCAMLR reporting formats. Raw data needed to allow for extrapolation of estimates along with the other fisheries in the Convention Area.
5.3	Acquisition of additional observer data to aid in identification of factors influencing seabird by-catch.	II.19	France	As soon as possible	Request inclusion into observer protocols of specific data elements (see paragraph II.19(i-vii)); report to WG-IMAF-08.
5.4	Status report on implementation of WG-IMAF recommendations re: mitigation research programs, observer coverage and implementation of mitigation measures.	Standing request	France, IMAF	Sept 2008	Report to WG-IMAF-08.
5.5	Estimates of IUU take of seabirds.	Standing request and II.75	France, SODA	Before start WG-IMAF 2008	Prepare 2008 estimates of IUU seabird by-catch. Examine methods of estimating the by-catch of grey petrels by IUU vessels within Division 58.5.1.
5.6	Request updated information on ACAP species assessments.	Standing request and I.49	Science Officer	Jul 2008	Request information. Submit paper to WG-IMAF-08 by deadline.
5.7	Request WG-SAM to review French analysis of petrel population responses to fisheries and environmental factors.	I.8(ii)	SAM	Jan 2008	Once SC-CAMLR-XXVI/BG/22 is available in English, request WG-SAM to review analysis and submit report to WG-IMAF-08.
6.	Scientific observer issues:				
6.1	Improved reporting on use of net sonde cables.	I.46(i)	Members		Reiterate need for improved reporting to distinguish between paravane cables and net sonde cables.
6.2	Distinguish between three longline fishing methods.	I.46(iii)		Dec 2007/ Jan 2008	Clarify for observers and in logbooks how to accurately report which longline system is being used: Spanish system, autoline system or trotline system.
6.3	Review priorities and protocols for observers in the cruise logbooks, cruise reports and the <i>Scientific Observers Manual</i> and address identified issues especially to determine if data collections meet data requirements.	Standing request	IMAF, SODA	Sep 2008	Participate in intersessional FSA task group to review priorities and protocols for observer data collection. Report to WG-IMAF-08.



Figure 1: Example of an effective Brickle curtain. (Photo from FV *Janas*)

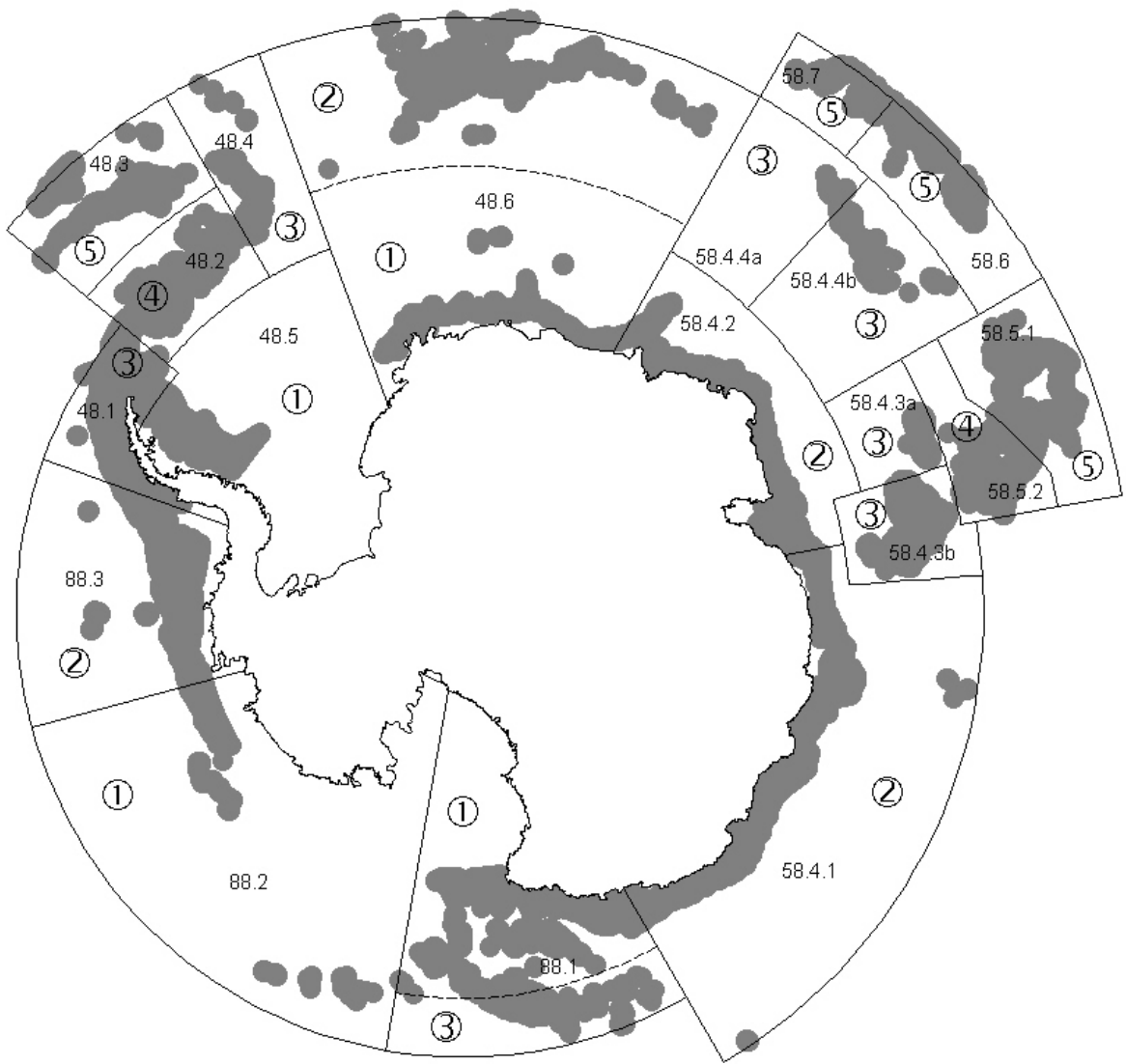


Figure 2: Assessment of the potential risk of interaction between seabirds, especially albatrosses, and longline fisheries within the Convention Area. 1: low, 2: average to low, 3: average, 4: average to high, 5: high. Shaded patches represent seabed areas between 500 and 1 800 m.

AGENDA

Ad Hoc Working Group on Incidental Mortality Associated with Fishing
(Hobart, Australia, 8 to 12 October 2007)

Incidental mortality of mammals and seabirds associated with fishing
(ad hoc WG-IMAF report)

Preliminaries

Intersessional work of ad hoc WG-IMAF

Incidental mortality of seabirds and marine mammals in fisheries
in the Convention Area

Seabirds

Longline

Trawl

Pot

Marine mammals

Longline

Trawl

Pot

Information relating to the implementation of Conservation Measures 25-02
(2005), 25-03 (2003), 26-01 (2006) and 24-02 (2005)

Incidental mortality of seabirds and marine mammals in fisheries
outside the Convention Area

Longline

Trawl

Incidental mortality of seabirds during unregulated longline fishing
in the Convention Area

Research into and experience with mitigation measures

Longline

Trawl

Observer reports and data collection

Research into the status and distribution of seabirds

Assessments of risk in CCAMLR subareas and divisions

Incidental mortality of seabirds in relation to new and exploratory fisheries

New and exploratory fisheries operational in 2006/07

New and exploratory fisheries proposed for 2007/08

International and national initiatives relating to incidental mortality of seabirds
in relation to longline fishing

 Coordination with ACAP

 International initiatives

 National initiatives

Fishery reports

Streamlining the work of the Scientific Committee

Other business

Advice