Agreement on the Conservation of Albatrosses and Petrels

Eighth Meeting of the Advisory Committee

Punta del Este, Uruguay, 15 -19 September 2014

Report of Seabird Bycatch Working Group

Seabird Bycatch Working Group

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Report of the Sixth Meeting of the Seabird Bycatch Working Group, Punta del Este, Uruguay, 10-12 September 2014

PURPOSE

This Report documents discussions and recommendations of the Sixth Meeting of the Seabird Bycatch Working Group (SBWG), held in Punta del Este, Uruguay from 10-12 September 2014. It also reports progress achieved in implementing the SBWG Work Programme for 2013-2015, and on the development of a Work Programme for 2016-2018.

1. INTRODUCTION

The Seabird Bycatch Working Group Convenor, Anton Wolfaardt, welcomed all Working Group members and observers (**ANNEX 1**) and introduced the Working Group's Vice-convenors, Igor Debski (New Zealand) and Tatiana Neves (Brazil). The Convenor invited all attendees to contribute fully and constructively to the meeting.

2. SBWG MEMBERSHIP

Argentina reported to the Working Group their intention to notify the Advisory Committee that Marco Favero will be standing down from his position as member of the Working Group, and will be replaced by Juan-Pablo Seco Pon. The Convenor nominated Jeff Mangel, Joanna Alfaro and Nigel Brothers as expert members of the Seabird Bycatch Working Group, highlighting that they have already contributed greatly to the work of the group, and that their expertise would assist the ongoing work of the Agreement. Current membership of the Seabird Bycatch Working Group is included in **ANNEX 1**.

3. ADOPTION OF THE AGENDA

The Convenor introduced the Agenda and asked if there were any other items to add. In order to frame the discussions on seabird byatch mitigation measures for pelagic longline, demersal longline and trawl fisheries (Agenda items 4, 5 and 6), the Convenor presented the criteria for assessing and recommending best practice seabird bycatch mitigation for these fisheries that was adopted at SBWG5 and AC7.

3.1 Best Practice Seabird Bycatch Mitigation Criteria

The Working Group reviewed the criteria for assessing and recommending best practice advice on seabird bycatch mitigation measures, and decided to amend criterion *i* to indicate that seabird incidental mortality may be determined either directly or by proxy using seabird attack rates; and to amend criterion *v* to better reflect the relationship between seabird bycatch mitigation and target species catch rates. The revised text is included in full below:

i. *Individual fishing technologies and techniques should be selected from those shown by experimental research to significantly*[1] *reduce the rate of seabird incidental mortality*[2] *to the lowest achievable levels*. Experience has shown that experimental research comparing the performance of candidate mitigation technologies to a control of no deterrent, where possible, or to status quo in the fishery, yields definitive results. Analysis of fishery observer data after it has been collected on the relative performance of mitigation approaches are plagued with a myriad of confounding factors. Where a significant relationship is demonstrated between seabird behaviour and seabird mortality in a particular system or seabird assemblage, significant reductions in seabird behaviours, such as the rate of seabirds attacking baited hooks, can serve as a proxy for reduced seabird mortality. Ideally, when simultaneous use of fishing technologies and practices is recommended as best practice, research should demonstrate significantly improved performance of the combined measures.

ii. *Fishing technologies and techniques, or a combination thereof, shall have clear and proven specifications and minimum performance standards for their deployment and use.* Examples would include: specific bird scaring line designs (lengths, streamer length and materials; etc.), number (one vs. two) and deployment specifications (such as aerial extent and timing of deployment), night fishing defined by the time between the end of nautical dusk and start of nautical dawn, and line weighting configurations specifying mass and placement of weights or weighted sections.

iii. *Fishing technologies and techniques shall be demonstrated to be practical, cost effective and widely available*. Commercial fishing operators are likely to select for seabird bycatch reduction measures and devices that meet these criteria including practical aspects concerning safe fishing practices at sea.

iv. *Fishing technologies and techniques should, to the extent practicable, maintain catch rates of target species.* This approach should increase the likelihood of acceptance and compliance by fishers.

v. *Fishing technologies and techniques should, to the extent practicable not increase the bycatch of other taxa.* For example, measures that increase the likelihood of catching other protected species such as sea turtles, sharks and marine mammals, should not be considered best practice (or only so in exceptional circumstances).

vi. *Minimum performance standards and methods of ensuring compliance should be provided for fishing technologies and techniques, and should be clearly specified in fishery regulations.* Relatively simple methods to check compliance should include, but not be limited to, port inspections of branch lines to determine compliance with branch line weighting, determination of the presence of davits (tori poles) to support bird scaring lines, and inspections of bird scaring lines for conformance with design requirements. Compliance monitoring and reporting should be a high priority for enforcement authorities.

[1] Any use of the word ‘significant’ in this document is meant in the statistical context

[2] This may be determined by either a direct reduction in seabird mortality or by reduction in seabird attack rates, as a proxy

3.2 ACAP Review and Best Practice Advice Documents on Seabird Bycatch Mitigation

Amongst the important tasks undertaken at each meeting of the Working Group is the updating of the reviews and best practice (summary) advice relating to mitigation measures for longline and trawl fisheries. On the basis of the research presented and reviewed at these meetings, the Working Group ensures that these documents remain up to date, and the updated, or current, versions are provided as Annexes to the meeting report (http://www.acap.aq/en/bycatch-mitigation/cat_view/128-english/392-bycatch-mitigation/391-mitigation-advice). Due to time constraints within the meeting, this process has generally involved adding or changing relevant sections, rather than reviewing in detail the entire documents. An intersessional review of the documents highlighted a number of areas in which the presentation of information could be improved. These included ensuring consistency within and between the documents, and checking that references were correct and up to date. The suggested changes were highlighted in track changes, and the revised documents were circulated to Working Group members for their inputs. It was noted that the intersessional review process did not include any changes of substance in the reviews or advice, but was restricted to the presentation and format of the documents. A number of inputs were received, and the edited documents were made available as 'Working/Draft Documents' at SBWG6.

A small breakout group discussed the edits, and agreed that these improved the presentation of information in the documents. The group agreed that the suggested changes be accepted, and recommended ways in which the documents could be further improved. The group proposed that a new version of these documents be prepared following a number of principles: better definition of some terminology, the possible use of illustrations and the inclusion of an additional category between 'Recommended' and 'Not Recommended'. It was proposed that the intersessional drafting group pilot these changes for pelagic longline fisheries, and following feedback from the Working Group, extend the revisions to the other two gear types (demersal longline and trawl fisheries).

The Working Group agreed that the ACAP Best Practice Advice, which is focussed on industrial fisheries, should be distinguished from advice provided on mitigation measures for artisanal and small-scale fisheries. This issue was discussed further during Agenda item 8 dealing with artisanal fisheries (see below).

ADVICE TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. endorse the revised definition of Best Practice outlined in points *i* to *vi* for use when developing advice on mitigation measures to reduce seabird bycatch; and
2. endorse the intersessional process to revise the layout and presentation of information in the bycatch mitigation review and best practice advice documents.

4. SEABIRD BYCATCH MITIGATION IN PELAGIC LONGLINE FISHERIES

4.1 Mitigation research update

Agenda Item 4 focused on information sharing and included presentations highlighting initiatives specific to seabird conservation in pelagic longline fisheries. The three working papers and two information papers received were divided into two categories: mitigation of seabird bycatch during line setting and mitigation during line hauling. Under the line setting category, papers addressed issues concerning branch line weighting; no papers were received on bird-scaring lines or night setting.

4.1.1 Haul Mitigation

SBWG Inf 08 reported on a publication of results from fitting observer data from the Hawaiian shallow set fishery to a generalized additive regression model with mixed effects to determine the significance of the effect of various factors on the standardized seabird haul catch rate. In this fishery, reductions of about 90% have been achieved with the implementation of mitigation measures. With effective mitigation measures implemented during gear setting, the majority of the current bycatch is currently occurring during gear hauling.

Density of albatrosses attending vessels during hauling, leader length and year had the largest model effects. The paper suggests further research of possible solutions to reducing the bycatch of albatrosses while hauling in the Hawaii shallow set fishery, including using shorter leaders, using heavier swivels, more efficient branch line coiling, and shielding the area where hooks become accessible to birds.

Noting that some pelagic longline fishers in this fishery use a lazy line, where fishers clip the branch lines aft of the vessel while busy during hauling, the Working Group suggested that mitigation of seabird bycatch could occur by removal of bait prior to attaching the branch line to the lazy line, or stopping the practice altogether. The need for research on haul mitigation techniques was noted. Work to progress the development of haul mitigation is included in the revised Work Programme.

4.1.2 Mitigation during line setting

4.1.2.a. Branch line weighting

SBWG6 Doc 12 reported increased voluntary uptake and compliance of sliding lead weights by Australian fishermen (six vessels), and suggests that sliding weights of an appropriate mass may be placed 0.5 m from the hook (as opposed to at the hook) to prevent the loss of sliding weights from shark bite-offs where this is an identified problem in relevant fisheries. Two additional mechanisms have been developed in the fishery, a device to retrieve sliding weights, and addition of a small (about 10g) swivel incorporated in the leader to prevent sliding leads moving too far up the line. The authors recommend that this information be disseminated to fishermen. No changes to ACAP best practice mitigation were proposed.

The Working Group noted that in some longline fisheries fishers move the sliding lead weights close to the hook on retrieval to prevent gear tangling prior to setting, thus making port inspections unreliable to detect appropriate placement of sliding weights relative to the hook. However, it was noted that the presence of branch line weighting could be readily monitored via port inspections.

SBWG6 Doc 15 authored by the ACAP Secretariat, reviewed available evidence on injuries sustained by fishers in the course of using weighted lines in pelagic longline fisheries. A survey of "relevant personnel" revealed that fly-back incidents caused at least 10 reported injuries in six jurisdictions between 1994 and 2014 including three deaths. This paper highlighted that fly-back injuries may largely go underreported and that this hazard could be minimised with proper training, safety gear, improved vessel design and the use of safer weighting configurations. The Working Group recommended that the Advisory Committee encourage Parties to provide any other information on fly-back injuries not covered in this report, and considers how the reporting of fly-back incidents can be improved.

The Working Group welcomed this initial and long awaited summary of injuries related to branch line weighting in pelagic longline fisheries. The Working Group noted the incomplete nature of the data on fly-back incidents and endorsed the development of reporting template to be provided to the Working Group and Parties to facilitate improved and consistent data collection.

The USA described a set-up in some vessels in the longline fleet whereby, a crew member loops the branch line around a rounded pole when hauling, such that the crew member can haul at an angle to the incoming hook, out of the line of a potential fly back. The Working Group expressed its appreciation for this advice and requested that further information on this technique be provided to enable its consideration for incorporation into the best practice advice.

The Working Group endorsed testing of line weighting configurations and devices (particularly the inertia of fixed versus sliding leads weights) to provide advice on the relative hazards of different weighting configurations concerning fly-back injuries, including advice about safer configurations and handling practices for ACAP recommended branch line weighting configurations.

SBWG6 Doc 13 recommended changes to ACAP best practice advice for branch line weighting based a new sink rate trial that compared three different combinations of weight mass using leader lengths of 0, 1, 2 and 3.5 m leader lengths (10 treatments total) to a control of no weighting. The length of monofilament between the hook and the weight is referred to here as the leader length. Although no new information was collected on seabird interactions or fish catch rates, the authors drew on **SBWG5 Doc 49** that compared bird catch and attack rates for two weighting regimes (65 g - 1 m from the hooks outperformed 75 g - 4.5 m from the hook) deploying short paired longline sets of 75 hooks for each treatment and without bird-scaring lines during the day in a Uruguayan longline research vessel. In that study the 75 g - 4.5 m weighting configuration produced 156 attacks on baits while the 65 g – 1 m weighting had 64 attacks. The captures on this latter configuration were of six birds (five black-browed albatross and one Northern Royal albatross), half of that caught by the 75 g 4.5 m from the hook configuration (ten black browed albatross, one southern royal albatross and one northern giant petrel). The authors of SBWG6 Doc 13 reported that the evidence from five separate studies indicate that baited hooks on shorter leaders using the identified line weighting configurations sink faster than on longer leaders and suggest changes to ACAP best practice recommendations based on this conclusion. SBWG6 Doc 13 also reiterates that line weighting be given priority over night setting and using bird scaring lines, (incorporated into best practice advice at SBWG5 with conditions based on SBWG5 Doc 51 and SBWG5 Doc 31) as part of the best practice advice.

After considerable discussion, the Working Group considered that the scientific evidence presented in SBWG6 Doc 13 was not sufficient at this time to modify the ACAP best practice advice for branch line weighting, in part because no statistical tests were applied to the sink rate data and in part the absence of new data on seabird attack rates or bycatch rates in response to the range of the branch line weighting configurations discussed. However, it was agreed that existing ACAP best practice branch line weighting recommendations be re-evaluated recognizing that new information has become available since the existing recommendations were formulated in 2006. To facilitate this re-evaluation, the Working Group crafted a 3-step research plan that includes the following steps: 1) statistical analysis of existing sink rate data to categorise various weighting configurations according to their sink rates; 2) review of the papers underpinning the existing ACAP advice, including taking account of the criteria for best practice and the type of seabird assemblages within which the previous studies were conducted; and 3) carrying out further collaborative field research on the relationship between sink rate configurations, identified in step 1, and resulting seabird mortalities and/ or seabird attack rates. The research design for this project should consider conducting trials using bird-scaring lines deployed according to ACAP recommended specifications to limit mortalities of albatross and petrels and to inform existing ACAP best practice advice calling for the use of simultaneous measures. However, the point of view was expressed that carrying out this research during the day without bird-scaring lines has merit in that some fisheries have not adopted bird-scaring lines or do not comply with bird-scaring line requirements; although this approach would use only one of three mitigation options in ACAP best practice. Further, the Working Group expressed strong support for the research plan to be carried in a collaborative manner across a range of seabird assemblages.

The Working Group noted that in addition to effects on seabird behaviour and bycatch rates, branch line weighting studies should include evaluations that take account of the other criteria for determining best practice, including among other things, the effects of line weighting on catch rates of target species and evaluation of the relative safety and practicality of alternative line weighting configurations, when compared to existing best practice line weighting configurations.

The Working Group recommended that this branch line weighting best practice advice re-evaluation be incorporated into the ACAP Work Programme as a high priority. Further, the Working Group recommended that an intersessional group be established to carry out this collaborative plan as the results from steps 1 and 2 become available. It is expected that this plan could be carried out and reported on at SBWG7.

SBWG Inf 12 reports on at-sea hook pods trials conducted by the Albatross Task Force in South Africa (2012), Uruguay (2013) and Brazil (2013). These data add to the increasing body of evidence that the hook pod device has the potential to: reduce seabird bycatch to near zero levels; is operationally simple to use; and does not reduce target catch rate. A final product of this prototype is expected in 2015 after additional trials in South Africa and New Zealand.

The Working Group welcomed this update on trials of this emerging technology. The Working Group found these results highly encouraging and look forward to results from ongoing trials in South Africa and New Zealand (and any further intersessional testing). The Working Group also noted that while the resulting sink rates from the use of hook pods will be able to be compared to existing line weighting regimes, if included in best practice guidelines in future, hook pods should be categorized differently from line weighting in ACAP

best practice advice as the measure makes the baited hook inaccessible to seabirds as well as enhancing sink rates.

4.2 Area and seasonal closures

The Working Group considered area and season closures as a tool to reduce seabird bycatch in pelagic longline fisheries and related research that might create a framework for implementation of time/area management options. The Working Group noted that the temporary closure of important foraging areas to fishing effort continues to be an effective measure in CCAMLR fisheries to prevent seabird bycatch, but one that ACAP has not actively pursued in discussions with RFMOs. The Executive Secretary reported that a number of distant water fleets had expressed an interest in this management approach in past years. The Working Group reiterated PaCSWG advice to the AC to update seabird tracking/fishing effort overlap maps to advance options for time/area management. The Working Group also noted that 'hotspots' can be misinterpreted such that areas shown as non-hotspots due to lack of data may be deemed unimportant and subsequently lead to poor compliance with ACAP best practice advice.

4.3 Best practice advice

A major product of previous SBWG meetings has been a review of information on current mitigation research for pelagic longline fisheries and the preparation of advice on best-practice mitigation (http://www.acap.aq/en/bycatch-mitigation/cat_view/128-english/392-bycatch-mitigation/391-mitigation-advice). Although no changes were proposed to existing ACAP best practice advice for pelagic longline fisheries on the basis of papers presented to the meeting, there was some discussion about the way in which side-setting is captured in the current review and summary advice documents for pelagic longline fisheries. It was noted that regional characteristics of some fisheries meant that mitigation measures that were effective in one area may not necessarily be effective in other areas. ACAP's best practice advice has been developed to reflect best practice in fisheries where the highest rates of interactions between ACAP species and fisheries are expected.

Research has shown that side-setting was effective in the Hawaiian longline fishery, when used in combination with other mitigation measures, although it could not be considered as best practice advice as it had not been tested in other fisheries where different aggregations of seabirds were found. It was agreed that mitigation measures such as side-setting should be acknowledged as effective, within the limits of constraints identified by the research, although they would not be considered as best practice advice.

It was agreed to include side-setting under the section 'Other Mitigation Measures' in ACAP's 'Summary Advice for Reducing the Impact of Pelagic Longline Fishing on Seabirds'. The adjustments to the relevant sections of the current Review and Summary Advice documents, together with the caveats, are shown in **ANNEX 2**.

4.4 Mitigation research priorities

The Working Group acknowledged the increasing volume of literature on mitigation measures, which in time will translate into advice by several national and international bodies. Such mitigation measures are often presented as prescriptive measures based on success rate under a limited set of variables, with contrasting results arising from geographic or seasonal differences. As a result, comparison among studies becomes difficult. As a way

forward, the Working Group encourages mitigation research outputs be presented as performance results, with clear identification of the causality by which the measure effectively precludes seabirds from accessing baited hooks.

The Working Group identified the following mitigation research priorities for pelagic longline fisheries:

Weighted branch lines: evaluate the effectiveness of the branch line weighting configurations defined in the existing ACAP best practice advice: The plan calls for three steps: 1) statistical analysis of existing sink rate data to categorise various weighting configurations according to their sink rates; 2) review of the papers underpinning the existing ACAP advice, including taking account of the criteria for best practice and the type of seabird assemblages within which the previous studies were conducted; and 3) carrying out further collaborative field research on the relationship between sink rate configurations, identified in step 1, and resulting seabird mortalities and/ or seabird attack rates.

Bird-scaring lines: developing bird-scaring line configuration for smaller vessels and methods that minimize entanglements of the in-water portion of bird-scaring lines with longline floats, while creating sufficient drag to maximize aerial extent, remains the highest priority for research on bird-scaring lines. Research evaluating the effectiveness of one vs. two bird-scaring lines; bird-scaring line design features (steamer lengths, configurations, and materials); and methods for efficient retrieval and stowage of bird-scaring lines remain research priorities.

Time-of-day: determine effectiveness of bird scaring lines and branch line weighting at night by characterising seabird behaviour at night using thermal or night-vision technologies. Determine the effects of time of day on the catch of target species**.**

Combinations of mitigation measures: evaluate the effectiveness of the simultaneous use of various combination of two best-practice mitigation methods (night setting, branch line weighting and bird-scaring lines) as called for by existing RFMO seabird conservation measures. Continue to evaluate the effectiveness of the simultaneous use of all three ACAP best practice mitigation measures**.**

Novel/Emerging technologies: continue to develop novel and or emerging technologies. At this time, the working group identified the following technologies as novel/emerging: devices that release or protect baited hooks at depths (beyond the reach of seabirds), lasers, sliding weights, and aspects of vessel design.

Sensory Ecology: encourage and initiate research to examine the sensory capabilities of seabirds (visual, acoustic, olfactory systems) to inform the development of sensory-based mitigation technologies and measures as an alternative to trial and error approaches. This research priority has application to the development of mitigation options across a broad range of fishing methods.

Haul mitigation technologies: develop methods that minimise seabird hooking during hook retrieval.

Time/Area Closures: update seabird tracking/fishing effort overlap maps to advance options for time/area management.

ADVICE TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. endorse the proposal to re-evaluate the effectiveness of the branch line weighting configurations (as defined in the existing ACAP best practice branch line weighting recommendations), recognizing that new information has become available since the existing best practice recommendations were formulated, using the 3 step research programme:
   1) statistical analysis of existing sink rate data to categorise various weighting configurations according to their sink rates;
   2) review of the papers underpinning the existing ACAP advice, including taking account of the criteria for best practice and the type of seabird assemblages within which the previous studies were conducted; and
   3) carrying out further collaborative field research on the relationship between sink rate configurations, identified in step 1, and resulting seabird mortalities and/ or seabird attack rates. This re-evaluation should inform a reconsideration of the best practice recommendations at a future meeting of the SBWG;
2. endorse the proposal for comprehensive testing of line weighting configurations and devices to provide robust advice on the potential for different weighting configurations to cause fly-back injuries, and identify configurations and handling practices for ACAP recommended branch line weighting configurations that improves safety;
3. endorse the development of a reporting template to be provided to the Working Group and Parties to facilitate improved and consistent data collection and reporting of fly-back incidents;
4. encourage Parties to provide information on the nature and extent of fly-back incidents.
5. support the proposed revision to the ACAP review and summary advice documents for pelagic longline fisheries to clarify the advice on side-setting as detailed in Annex 2 of the SBWG6 report.

5. SEABIRD BYCATCH MITIGATION IN DEMERSAL LONGLINE FISHERIES

5.1 Review of mitigation measures and best practice advice

SBWG6 Doc 23 reported on preliminary results of the SeaBird Saver, which consists of a combination of a 1,400 mW Class 4 laser that can be linked with an acoustic deterrence stimulus. The device was developed by Mustad and Save Wave to reduce seabird interactions in fisheries. Trials were conducted over four sets of 40,000 hooks in an autoline demersal longline fishery in Iceland with a seabird assemblage dominated by larids and northern fulmars. The Working Group expressed concern that such a device, with potential to damage birds' retinas, had been deployed at-sea without rigorous assessment of potential

safety issues. It was recognised that currently very little is known about the structure and sensitivity of the visual systems of marine birds and therefore the potential impact of lasers on their retinas. The field of sensory ecology of birds is a field that has largely been ignored in seabird and fisheries interactions and it was acknowledged that sensory investigation provoked by the SeaBird Saver could potentially yield insights for new or improved mitigation technologies.

SBWG6 Doc 23 highlighted that the laser component of the SeaBird Saver may be only effective during night time and low light (foggy/misty) conditions which was agreed to have potentially limited application in many fisheries. It was agreed that further data are required both on the safety of the device and also the effectiveness of the combination of acoustic deterrents and the laser under a range of light conditions and in fisheries which interact with albatrosses and petrels. Ed Melvin proposed a collaborative intersessional process for information exchange on safety issues and the development of research priorities if/when the safety issues are clarified. He also indicated he is finalising a research plan for tests in the USA, which will firstly investigate potential safety issues for birds and people, and if these issues are satisfactorily addressed, it will then include at-sea testing on the effectiveness of the SeaBird Saver under commercial fishing conditions. The Working Group acknowledged the potential utility of the technology across gear types but recommended that bird welfare issues be addressed before further at-sea testing or industry uptake can be supported.

SBWG6 Inf 02 The Working Group noted information on the development and trialling of the Kellian Line Shooter and it was agreed that the device had the potential to be an effective mitigation option for smaller (inshore) demersal longline gear if current developmental issues can be overcome.

The Working Group discussed the challenges of mitigating seabird bycatch in floated demersal longline gear, which incorporates floats on the mainline to raise the hooks off the seabed. Progress was reported in trialling new techniques (e.g. longer dropper lines) in Australia, New Zealand and the USA. Experience in Argentina with this gear type suggests the majority of seabird bycatch occurs on hooks adjacent to the floats. An intersessional group was established to further investigate potential mitigation solutions for this gear type.

5.2 Mitigation research priorities

Development and testing of mitigation measures for small vessels remains the main outstanding research priority. Other research priorities include:

- **i.** Development and testing of mitigation options tailored to fishing practices that use additional floats between weights in some demersal longline fisheries to raise sections of the line off the seabed, and thus reducing sink rates.
- **ii.** The potential for harmful impacts of laser bird-scaring devices to albatross and petrel species, and if proven safe, their bycatch mitigation effectiveness.

6. SEABIRD BYCATCH MITIGATION IN TRAWL FISHERIES

6.1 Review of bycatch mitigation measures and best practice advice

There were no Working Group Documents considered under this agenda item. A total of four information papers were considered by the Working Group: **SBWG6 Inf 04** reports on an expert forum that is considering new approaches for mitigation of seabird bycatch in trawl and set net fishing gear. This work is being led by the Southern Seabird Solutions Trust. A Technical Mitigation Workshop undertook a review of known effective seabird mitigation approaches for trawl and set net gear, emerging measures and those which have been tested and discarded. Eight potential measures identified included: trawl: net chokes, lasers, mesh colour, and drones. Gillnet: net rollers, mesh height/size, pingers, and mesh colour. The expert forum will consider these measures further.

SBWG6 Inf 06 reported on an innovative project underway in Australia aimed at reducing the number of seabird mortalities due to interactions with the nets (as distinct to the warps) of trawl fishing vessels.

SBWG6 Inf 11 provided preliminary results on the interaction of seabirds with the Uruguayan trawl fleet targeting hake. From a total of six trips and 126 observed trawls a total of 21 species were recorded associated with the vessels. A total of 11 species interacted with the trawl warp cables, including Great Shearwater, Black-browed Albatross, Cape Petrel, White-chinned Petrel and Atlantic Yellow-nosed Albatross. From 188 hours of warp observations 1,598 contacts (8.48 contacts / hr) and 229 heavy contacts (1.22 contacts / hr) were recorded. A total of 34 of the 229 heavy contacts resulted in the possible death of the bird; for the remaining 195 contacts, the bird was confirmed to survive the contact. Seven birds (six Black-browed Albatrosses, one Atlantic Yellow-nosed Albatross) were confirmed dead on the cables (0.037 birds / hr). Further dedicated observations are required but preliminary work indicates the fishery is a concern and requires the use of mitigation.

SBWG6 Inf 13 refers to a published paper on seabird bycatch in the South African hake trawl fishery. In 2004/05 an estimated 15,500 (range 7,000 - 26,000) seabirds were killed annually in this fishery. Reanalysis of the data from pervious unavailable log book data gave ~40% lower estimates: ~9,300 birds in 2004, of which ~7,200 were albatrosses. Compared with data from 2006 - 2010 after the introduction of bird-scaring lines in the fishery, from a total of 64 trips and 690 hours observation 41 seabird were killed from cable strike of which 22% were albatrosses. Bird scaring lines alone reduced mortality rates by 73-95%. Estimated total mortality in 2010 was 990 (556 - 1,633) seabirds including 83 (38 - 166) albatrosses, which represents a reduction in mean albatross deaths by >95%.

The progress made by Uruguay in assessing levels of bycatch in their trawl fisheries (SBWG6 Inf 11) was welcomed. The substantial reduction in the bycatch of albatrosses and petrels in the South African deep water hake trawl fishery due to the use of bird-scaring lines highlighted the effectiveness of this mitigation for trawl fisheries. The SBWG therefore welcomed plans by Uruguay to test these measures in their trawl fishery.

Argentina informed the Working Group that their Federal Fisheries Council has recently approved a pilot project to test the use of bird-scaring lines on the Argentine freezer trawlers. This initiative was prepared by the Technical Advisory Group in charge of monitoring the implementation of the National Plan of Action to reduce the interaction between seabirds and fisheries.

This project, designed by the Albatross Task Force (ATF), Argentina, CONICET, the Institute of Fisheries Research and Development (INIDEP), among other government agencies, will be implemented from 01 October 2014. The use of bird-scaring lines will be tested on Argentine freezer trawlers for a period of six months to detect problems that may occur so as to proceed to the necessary adjustment on existing procedures and practices. This will guarantee an optimal effectiveness of such a mitigation measure. Training activities aimed at crew, observers and surveillance officers are also planned in this project.

This initiative continues the ongoing work on the hoki fishery, which started in 2010, raising awareness of these issues. More information on the implementation of this project will be presented to the SBWG7 meeting

6.2 Mitigation research priorities

The Working Group confirmed the following research areas as the highest priorities for further reducing seabird bycatch in trawl fisheries:

- **i.** Options to reduce seabird interactions with cables (trawl warps, net-sonde and paravanes) by manipulating the time, nature and location of offal discharge, recognising size and operational differences between vessels.
- **ii.** Methods to reduce seabirds becoming entangled in nets during hauling.
- **iii.** Methods that can be applied to various fisheries/seabird assemblages to determine relationships between seabird abundance, cable interactions and mortality (quantifying the level of undetected or cryptic mortality).
- **iv.** The applicability of net binding across pelagic fisheries.
- **v.** Methods and designs to improve efficacy of bird-scaring devices in reducing seabird interactions with trawl gear.

The Working Group requested that the Advisory Committee encourages Parties and others to prioritise these areas of research and to keep the group informed of developments in research on seabird mortality and mitigation in trawl fisheries.

7. SEABIRD BYCATCH MITIGATION IN GILLNET FISHERIES

SBWG6 Doc 07 described and defined net fishing methods other than trawl, to enable the Working Group to better target and classify mitigation needs amongst these fisheries, and thus allow the development of best practice mitigation advice where relevant. Broad support was expressed for the adoption of the FAO nomenclature and classification. The paper also included a brief summary of the limited literature on seabird bycatch risk posed by these fisheries, and identified that gillnet and entangling nets did pose risk to ACAP species. The Working Group supported the recommendation to begin working toward developing best practice mitigation advice for gillnet and entangling net fisheries, noting that information regarding these fisheries and their interactions with seabirds is quite limited and that any new information would assist the group in setting priorities. The group encouraged the development of a staged workplan and the development of two intersessional work streams. Firstly, this would include drafting a mitigation review document for gillnet and entangling net fisheries, based on existing recent comprehensive reviews, in order to support the development of an advice document at future meetings. This would be accompanied by

developing detailed research recommendations. The second aspect was to conduct a further assessment of what is known about the risks that other net fisheries pose to seabirds, so that these fisheries could be considered for the development of mitigation advice at a later stage if it is shown that they pose risks to ACAP species.

It was also noted that a multi-taxa gillnet bycatch meeting will be held in early 2015, and the results from this meeting could inform this agenda item. It was suggested that a summary document of findings from this meeting be prepared for presentation to SBWG7. Likewise it was recommended that ACAP present a document to that meeting highlighting the information needs of ACAP and how outcomes of the meeting could benefit its work and setting priorities.

SBWG6 Doc 16 provided results of tests of visual cues and sub-surface nets as bycatch mitigation in small-scale gillnet fisheries in Peru. The first trial presented, testing LED lights in a demersal set gillnet fishery, observed statistically significant declines in the bycatch rates of seabirds, sea turtles and seahorses when lights were used with no impact on the target catch rates of guitarfish. The second experiment, which involved a small-scale surface driftnet fishery that set nets a few meters below the ocean surface, observed declines in target catch of sharks and rays and bycatch of sea turtles and marine mammals. The authors indicated that research continues with both mitigation technique as well as efforts to implement LED lighting as a multi-taxa bycatch mitigation measure. The authors also presented a series of recommendations, including additional research of net lighting in other net fisheries, particularly those that may have interactions with ACAP listed species. There was discussion on the wavelengths of light used and it was indicated that different wavelengths of light can be applied depending upon the target species and the bycatch one seeks to avoid.

The Working Group congratulated the authors of this work, and supported plans for further research. The Working Group also recognized the need for more research on the sensory ecology (not just visual) of seabirds to help in the design of effective mitigation measures. It was noted that the net lighting study occurred in near-shore waters, with interactions with coastal seabird species and that additional work was needed (and is underway in Peru) to assess fisheries that may have interactions with albatross and petrel species. The Working Group was also informed that several reviews and field studies are currently underway assessing the sensory ecology of seabirds, sea turtles, sharks and cetaceans. Additionally, BirdLife noted it is planning trials of bycatch mitigation in gillnets in Lithuania in the coming year and has additional work planned on net fishery interactions with pink-footed shearwaters that also seeks to identify and test bycatch mitigation solutions.

ADVICE TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. recognise the standard terminology proposed for net fisheries in SBWG6 Doc 07;
2. support the proposed intersessional work to draft a mitigation review document for gillnet and entangling net fisheries in support of future mitigation advice;
3. support the proposed intersessional work to develop research priorities for these fisheries, including research in the area of sensory ecology;
4. support the proposed intersessional work to further review the risk posed to seabirds

by other net fishing gear methods to identify any other methods for which the development of ACAP mitigation advice would be appropriate.

8. ARTISANAL FISHERIES AND INTENTIONALTAKE

8.1 Review of definitions of artisanal and small-scale fisheries, and bycatch and mitigation measures in these fisheries

SBWG6 Doc 08 addressed definitions for artisanal, small-scale, subsistence and recreational fisheries and proposed the adoption of FAO fisheries glossary as standard definitions. A broad inclusion of these fisheries in the SBWG Work Programmes presents a challenge for the Agreement given that the implementation of mitigation methods designed for industrial vessels are difficult to transfer directly to smaller scale fisheries.

The Working Group supported the use of FAO definitions of artisanal, small-scale, subsistence and recreational fisheries. It was noted that recreational fisheries category was added because, in some countries, these fisheries are similar in some respects to artisanal fisheries, and the authors noted this would provide a more holistic approach to these definitions.

The Working Group agreed that these definitions could be adopted while the Agreement looks into more detail at these fisheries. Having better definitions of these fisheries would be particularly useful for those countries where artisanal/small-scale fisheries are more relevant given the size of these fleets.

The use of electronic monitoring (vessel monitoring systems) was also mentioned as a possible recommendation for use in monitoring artisanal or small-scale fisheries.

The Working Group highlighted the importance of distinguishing between small-scale and industrial fisheries when considering and developing measures and approaches for mitigating seabird bycatch. The Working Group agreed that the development of mitigation measures for small-scale fisheries remains a priority. Given the highly variable nature of small-scale fisheries, the prescriptive nature of the best practice advice developed by ACAP for industrial fisheries was deemed not to be appropriate, and the Working Group endorsed the proposal in SBWG6 Doc 08 to rather develop advice along the lines of a package or 'tool box' of mitigation measures.

SBWG6 Doc 14 provided information about the development of a new, fast setting method developed that is believed will not only greatly assist in reducing the risk to seabirds in the small-scale demersal Ecuador hake longline fishery, but also has the potential to substantially improve operations and safety practices for the fishermen. The potential benefits were outlined and demonstrated in a DVD. This project highlighted the difficulties of applying ACAP Best Practice, and highlighted the need for the Working Group to give further consideration to accommodating alternative mitigation measures that are likely to be necessary in artisanal and small-scale fisheries.

The Working Group noted the need to disseminate results like those obtained in Ecuador, to reach a wider audience, one potential vehicle for dissemination being the ACAP web site.

8.2 a) Research priorities for artisanal and small-scale fisheries

A breakout group discussed the research needs relating to bycatch of ACAP species in the artisanal and small-scale fisheries and identified the following priorities:

i. Estimates of the size of the fleets and their temporal and spatial distributions, recognizing the potential for gear changes.
- Seek this information from members and range states.

⇒ Summaries should include brief descriptions of the fisheries (e.g. type gear characteristics, fishing routine).

ii. Attempt to identify the fisheries in which ACAP species may be impacted. Need for baseline information (spatial, temporal, etc.) to allow for assessments of the effectiveness of any bycatch mitigation measures that may be proposed.
- How to do that?

⇒ Rapid assessment approaches

⇒ Consider using Prioritization framework as example exercise.

iii. For those fisheries preliminarily considered a risk to ACAP listed species, attempt to determine levels of bycatch.
- If onboard observation not possible, rapid assessment techniques could be used to develop more detailed information.

iv. Identify those fishing gear types for which ACAP Best Practices may apply.

v. Identify potential replication or transference opportunities of mitigation techniques. Proposing ACAP as the 'clearinghouse' of information.

vi. Undertake a bycatch susceptibility study.

vii. Focus on main ACAP species range (to help focus the research effort).

viii. Facilitate the availability of appropriate line weighting equipment for application in all pelagic longline fisheries.
- With directions provided on appropriate Best Practice application.

8.2 b) Research priorities for recreational fisheries

i. Review current information available on the distribution of recreational fishing effort and where they overlap with the distributions of ACAP species. This review should provide guidance on the areas where seabird bycatch in recreational fisheries is likely to be an issue.

ii. Utilising the review mentioned above, conduct surveys of recreational fishers regarding bycatch of seabirds in higher risk areas. This survey should gather information of seabird bycatch and include fishing method and level of effort associated. For some nations that undertake surveys of recreational fishers for fish catch estimation purposes, it may be possible to add supplementary questions about seabird bycatch, thereby reducing cost.

ADVICE TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. recognise the standard terminology proposed for artisanal, small-scale and recreational fisheries in SBWG6 Doc 08;
2. endorse intersessional work to develop a 'toolbox' template for providing mitigation advice in artisanal, small-scale and recreational fisheries;
3. support the development of a research strategy for artisanal and small-scale fisheries, based on research priorities identified.

9. BYCATCH DATA COLLECTION AND REPORTING

9.1 Bycatch data reporting

For ACAP to review and monitor levels and trends of bycatch ACAP-listed species in relevant fisheries, a web-based reporting system has been developed for the capture and use of fisheries and bycatch data from Parties and collaborating Range States. A previous review of the submitted data (SBWG5 Doc 16) highlighted that the temporal and spatial resolution of the data were too coarse to enable useful assessments of seabird bycatch levels and trends. Consequently, at SBWG5 it was recommended that data should be provided at a spatial scale of at least 5x5 degrees grid-square for each quarter of the year. In recognition that some Parties and Range States might not be in a position to readily comply with this recommendation in the short term, a questionnaire was sent to Parties and to determine their ability to provide the data at this resolution and to solicit information on any challenges associated with meeting this request.

SBWG6 Doc 09 summarised the responses received and presented an update of the bycatch and fisheries data submitted by Parties and collaborating Range States. An evaluation of the submitted data showed that for many fisheries the data are incomplete, hampering the possibility of conducting even a cursory assessment of bycatch levels and trends of ACAP-listed species. SBWG6 Doc 09 urged all Parties to ensure that the data for fisheries under their jurisdiction are up to date, complete and accurate. Additionally, the previous recommendation to improve the resolution of the submitted data was re-iterated.

Argentina stated that providing the data at the recommended spatial-temporal resolution was possible for Argentina. However, Argentina noted that it would not be possible to report the current year-data, and that additional 1 to 2 years would be needed before it could be submitted. For information already reported, Argentina considered that re-processing of such information in the recommended resolution could be a highly demanding task. Furthermore, Argentina stated that data provided should be used by the Secretariat only, or for papers tasked by the Secretariat with previous authorisation of the Parties involved. Lastly, Argentina stressed that such data should be processed and presented in an aggregated manner, i.e., showing totals of fishing effort per 5x5 degree-area considered (summing up data of all countries reporting in such area).

Uruguay suggested that instead of the current situation, where each Party submits their data to the Secretariat for subsequent analyses, that each Party analyses their data and submits interpreted data to the Secretariat.

Following discussion about whether the Parties should analyse their own data and routinely submit the results to ACAP, or whether the raw or aggregated data should be sent to ACAP for analyses, a recommendation was made to first define clearly the bycatch indicators that would be used by ACAP to measure and track bycatch of ACAP species. Once these indicators are defined, the data, methodological approaches to estimating bycatch, and reporting requirements could be determined. The Working Group endorsed this recommendation, which was discussed further in Agenda item 10 dealing with ACAP Performance Indicators.

9.2 Electronic monitoring

Two documents concerning electronic monitoring (E-monitoring) were discussed by the Working Group. **SBWG6 Doc 06** provided background information and an example of a possible E-monitoring fact sheet. E-monitoring uses a system of video cameras, gear sensors, and GPS mapping technology to create an accurate record of a vessel's fishing activity at sea. The equipment runs automatically, mapping the cruise track, logging fishing times and locations, and creating a video record of key fishing operations including bycatch mitigation measures. E-monitoring is considered to be a useful tool for monitoring the effective use of many of the mitigation measures that have been recommended by ACAP to reduce the incidental mortality of seabirds in demersal and pelagic long-line, and trawl fisheries.

SBWG6 Doc 22 presented details concerning the implementation of E-monitoring as an approach to independently monitor seabird bycatch in fishing operations in Australian waters. The use of E-monitoring in Commonwealth-managed fisheries has been based on pilot projects and system trials that have assisted in the design and implementation of these systems, as a potentially cost-effective alternative to on-board observers. Electronic monitoring is considered an additional approach to independent monitoring under the revised Threat Abatement Plan 2014 for the incidental catch of seabird during longline fishing operations. Australian experience indicates that electronic monitoring relies on properly formulated legislative arrangements that provide an incentive to fishing operators to ensure the effective operation of electronic monitoring equipment, accurate recording of seabird bycatch in logbooks, while protecting the privacy and commercial value of data that are collected. Australia considers it is important that any decision to introduce electronic monitoring should be made on a fishery by fishery basis, taking into consideration the attributes of each fishery.

Argentina noted that implementing E-monitoring at a national level is a decision that goes well beyond the scope of ACAP, and has to do with considerations related to fisheries management in general. Therefore, in the opinion of Argentina, ACAP should in principle focus on how it would benefit from the implementation of E-monitoring. Finally, Argentina mentioned that its national fisheries authority (Subsecretaría de Pesca y Acuicultura) is working on the development of a non-commercial, E-monitoring system.

The Working Group recognized the potential value of E-monitoring and noted that it was being assessed, tested or used by a number of Parties or collaborating Range States. However, some members of the Working Group expressed concern about endorsing or recommending the technology. Concerns expressed included a lack of evidence demonstrating that E-monitoring could perform as well as onboard scientific observers with respect to capturing rare events and species identification; and the appropriateness of

transferring the responsibility for monitoring bycatch into the hands of private E-monitoring companies.

SBWG Inf 08 highlighted the importance of identifying the objectives related to the use of E-monitoring. Depending on the objectives that ACAP identifies, a more comprehensive look at various monitoring methods may be warranted. While E-monitoring could be useful in monitoring compliance with seabird bycatch mitigation measures, if the SBWG wished to endorse a publication on systems to review interactions with seabirds and evaluate the effectiveness of bycatch mitigation efforts, the USA strongly recommended that a more general fact sheet on the topic of monitoring be developed (including the use of both E-monitoring and scientific observers). Lastly, the USA suggested considering a framework for identifying the best method to monitor seabird bycatch and compliance with mitigation requirements; such a framework could be used to list the monitoring objectives and examine the use of observer programmes and/or E-monitoring as appropriate tools to reach these objectives.

The Working Group highlighted the importance of considering E-monitoring as an additional or complementary tool that may be considered in addition to the use of observer programmes. The Working Group recommended that intersessionally a small group should continue to examine the benefits and limitations of E-monitoring, and that this investigation should focus specifically on seabird bycatch. This intersessional work should include the investigation and development of best practice guidelines concerning the design, development, implementation and evaluation of electronic monitoring systems, the results of which should be reported at SBWG7.

ADVICE TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. endorse the development of appropriate bycatch indicators before defining the data needs, methodological approaches and reporting requirements for monitoring bycatch of ACAP species;
2. endorse an intersessional investigation of the benefits and limitations of e-monitoring concerning seabird bycatch and mitigation, and through this process the development of best practice guidelines.

10. ACAP PERFORMANCE INDICATORS

SBWG6 Doc 10 reported progress made towards developing bycatch related indicators to measure the effectiveness of the Agreement.

Following discussion during Agenda Item 9 *Bycatch Data Collection and Reporting*, it was agreed that immediate focus should be given towards defining the Pressure indicator P1 *Bycatch rates and levels of ACAP species*. The Working Group agreed that the primary indicator measures should be the total number of birds bycaught per year of ACAP species (by species where possible), and their bycatch rate, across each of the fisheries of Parties. The Working Group also encouraged the cooperation between Parties to conduct estimates

at regional levels, especially when the distributions of fisheries overlap jurisdictions. It was envisaged that each Party would use their own domestic fisheries data to provide estimates to ACAP of these measures for each of their fishing fleets. The Working Group identified that a range of methodological approaches could be used by Parties to estimate these figures, and appropriate methodologies would vary according to data availability. The frequency of estimates, the accuracy of estimates, the ability to back cast estimates to the establishment of ACAP, and the ability to distinguish between species in bycatch were all recognised as key considerations. An intersessional group was established to further define the detail of the indicator measures and review the range of methodologies currently used by Parties, in order to establish guidelines and advice on suitable methodologies. The intersessional group will report back to SBWG7 with the aim of establishing both the indicator measures of preference and the reporting requirements of Parties in order to measure progress against them.

It was noted that progress had been made in PaCSWG2 towards further defining the State indicator S1 *Availability of data for definition of at-sea ranges of ACAP species.* The proposed indicator table for State indicator S2 *Availability of bycatch data relevant to ACAP species* was noted to no longer be suitable to measure progress towards establishing indicator P1 due to the new approach developed. Once the approach is further developed by the intersessional group, it is envisaged that a State indicator to measure the currency and accuracy of estimates being provided can be developed.

The Working Group agreed that in order to measure the agreed Response indicator R1 *Implementation of seabird bycatch mitigation with EEZs*, a change would be required to the ACAP reporting template to require relevant responses to be more categorical. The Working Group agreed that the proposed structure provided in Table 2 of SBWG Doc 10 would provide a suitable template. The Working Group noted that Response indicator R2 *Engagement with RFMOs on seabird bycatch issues* had been further developed by the RFMO intersessional group and was reported in **SBWG6 Doc 20**. Finally, for Response indicator R3 *Research and development for effective seabird mitigation measures* the Working Group agreed that a measure on the extent to which research undertaken and reported to SBWG meetings responds to the research priorities identified by the Working Group would be a suitable approach. An initial population of this indicator will be presented for consideration at SBWG7.

ADVICE TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. endorse the proposed intersessional work to refine measures for Pressure indicator P1 *Bycatch rates and levels of ACAP species* and review the range of methodologies currently used by Parties, in order to establish guidelines and advice on suitable methodologies;
2. support the proposed changes to reporting requirements of Parties to create categorical reporting on mitigation measures in order to allow Response indicator R1 *Implementation of seabird bycatch mitigation with EEZs* to be populated;
3. endorse the proposed approach of assessing the relevance of mitigation research reported to SBWG meetings as a measure for Response indicator R3 *Research and*

development for effective seabird mitigation measures.

11. CO-ORDINATION OF ACTIVITIES RELATING TO RFMOS

SBWG6 Doc 11 reported progress against the RFMO Engagement Strategy approved at AC7. The lack of data from observer programmes and other sources continues to constrain an accurate assessment of the extent to which seabird conservation measures are being effectively implemented and the paper recommends that future actions focus on improving data reporting and the implementation of seabird conservation measures.

The ACAP RFMO Coordinators presented summaries on progress and issues arising over the past year concerning Regional Fisheries Management Organisations. The following issues were highlighted:

i. In WCPFC, efforts continue to build the case for removing the exemption for fishing vessels less than 24m in length in the North Pacific from the requirement to deploy seabird mitigation measures, which is required by larger vessels in accordance with conservation measure CMM 2012-07. This will require further discussion by the WCPFC Scientific Committee in 2015.
ii. In IATTC, several parties have expressed support for a revised conservation measure in 2015
iii. Discussions have occurred in both WCPFC and IOTC on how % observer coverage is defined. The view of the SBWG, as agreed at AC7, is that this must be measured in number of hooks observed hauled, not number of days at sea. Concern was expressed at the continued low level of bycatch reporting by IOTC member states.
iv. CCSBT will hold a workshop in November 2014 to develop methods to monitor the effectiveness of tuna RFMO seabird conservation measures. This has the potential to inform other RFMOs also, promoting harmonization of assessment methods. Several members of SBWG will attend.
v. CCSBT will be considering a conservation measure on seabird bycatch mitigation at its next meeting.
vi. At the 2013 ICCAT Commission meeting, efforts were made to finalise an ACAP-ICCAT Memorandum of Understanding, without success. Views from the SBWG were sought on the value of continuing to pursue this.
vii. The ICCAT Sub-Committee on Ecosystems has agreed an approach by which it will review the effectiveness of its 2011 seabird measure and consider the need for updates. Draft data reporting forms have been produced for the ICCAT longline observer program. ICCAT fishing effort data will be updated in 2015, filling an important gap necessary for assessment of seabird bycatch (last done in 2007).
viii. The South Pacific RFMO has adopted a seabird conservation measure for its trawl and longline vessels to use seabird bycatch mitigation measures.
ix. A workshop will be held in January 2015 to identify minimum data standards for tuna RFMO longline observer programs. This is funded by the International Sustainable Seafood Foundation (ISSF) and follows a similar ISSF workshop on purse seine data.

Participants recognised the importance and value of collaboration between Parties and Range States, the ACAP Secretariat and NGOs in achieving the progress made at RFMO meetings and encouraged the continuation of this collaboration at future meetings.

It was noted that the SPRFMO seabird conservation measure (CMM 2.04), contains an exemption for trawl vessels that have no offal discharge from the requirement to use seabird bycatch mitigation measures. This exemption will be reviewed and research was encouraged to determine if this exemption was warranted. The Executive Secretary noted that the European Union is seeking funding for a research program to explore the implications of this exemption and asked the Working Group if ACAP should offer to assist with the design and conduct of this research.

BirdLife International noted that progress on some issues within the ACAP RFMO Engagement Strategy (such as improving data collection and monitoring compliance) are substantial issues that will take several years to progress satisfactorily. Given the burden of work this entails, BirdLife asked if it would be beneficial to revisit the work done at previous SBWG meetings to divide up tasks and leads across a number of ACAP parties, to lighten the workload and resources required by the ACAP Secretariat. The Executive Secretary noted that the work-load associated with the implementation of the RFMO Engagement Strategy is shared between himself, the Convenor of the SBWG and the Chair of the Advisory Committee, as well as ACAP Parties, and that this arrangement makes the workload manageable for the Secretariat.

SBWG6 Doc 20 gave an update on the work of the intersessional group which was formed at AC7 to identify methods appropriate to review the effectiveness of tuna RFMO seabird bycatch conservation and management measures. Based on discussion begun at SBWG5, the group developed a paper that has been submitted to CCSBT, ICCAT and WCPFC. This has contributed to the establishment of a CCSBT Seabird Mitigation Measure Technical Group, which will discuss monitoring methods at a workshop from 4-6 November 2014 in Tokyo. The ICCAT Sub-Committee on Ecosystems also made use of the ACAP intersessional group work in planning its seabird measure review that will begin in 2015.

SBWG6 Doc 21 provided a summary of data held by ACAP on levels of seabird bycatch in fisheries adjacent to the CCAMLR Convention Area, responding to a request made at the XXXII CCAMLR meeting in 2013. The paper also reports on ACAP's process to develop a bycatch data reporting and assessment framework and provides an update for CCAMLR on ACAP's engagement with RFMOs, and the need to improve levels of bycatch reporting within RFMOs. A number of Parties asked for data relevant to its fisheries to be updated and undertook to provide this information to the Secretariat for inclusion in the paper. The Executive Secretary noted that there may be merit in updating this paper annually for submission to CCAMLR in order to seek CCAMLR Members support for the submission of improved data on seabird bycatch from adjacent fisheries.

SBWG endorsed the paper and supported its submission as a background paper to SC-CAMLR-XXXIII.

ADVICE TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. recognise the progress made on many of the tasks identified in the RFMO engagement strategy;
2. endorse the inclusion of the additional actions to be taken in the SPRFMO during 2015-16 by the Advisory Committee in the RFMO strategy;

3. support the implementation of these actions and provide the resources necessary to achieve them.
4. endorse the recommendations of the ACAP intersessional group on the proposed elements for reviewing RFMO bycatch mitigation requirements (see SBWG6 Doc 20);
5. support the participation of members in the 2015 ICCAT review and in the WCPFC discussion of management objectives and submitting a paper to the IOTC Working Party on Ecosystems and Bycatch in October 2014;
6. endorse participation in the workshops planned by CCSBT (November 2014) and ISSF (January 2015), noting that these will be helpful in developing a harmonised approach to seabird bycatch data and monitoring across tuna RFMOs, which is necessary if cumulative impacts are to be assessed;
7. endorse the submission of SBWG6 Doc 21 as a background paper to SC-CAMLR-XXXIII.

12. FAO IPOA/NPOA-SEABIRDS

AC8 Inf 17 reported on progress on Brazil's National Plan of Action – Seabirds (NPOA-Seabirds). The document outlined the information provided in Brazil's Implementation Report to ACAP and contains some of the most important activities implemented to address the conservation of ACAP species in Brazil. The document included information about the implementation of NPOA-Seabirds/Brazil and the national rules for the seabird bycatch mitigation measures. Progress on the development of mitigation measures on longliners by the Albatross Task Force Program in Brazil was reported, including experimental work on hook pods and lumo leads, work that has been funded by ACAP. The creation of the Albatroz Network for Conservation Research by Projeto Albatroz and a brief explanation on education activities for fishermen and students is also included in the document.

Uruguay reported that a review of their NPOA-Seabirds was initiated in 2012, and should be concluded soon. The review considers mitigation measures information for pelagic and demersal long lines fisheries, and will also include the investigation of appropriate mitigation for the trawl fishery. In this way, mitigation measures shall be incorporated for a new fishery that was not identified as a conservation problem until recently. Uruguay highlighted the importance of presenting results of NPOAs reviews and implementation to ACAP.

Chile reported on their monitoring program to assess the implementation of mitigation measures on each fishery identified under the NPOA-Seabirds, carried out by the Instituto de Fomento (IFOP) with funding by the Undersecretary of Fisheries and Aquaculture (Subsecretaria de Pesca). In addition, Chile is developing a National Plan of Action for the Conservation of the Pink-footed Shearwater (*Puffinus creatopus*), which is currently under consideration for inclusion into Annex 1 of ACAP.

New Zealand reported that since the last meeting of the Advisory Committee further activities have been undertaken to implement their NPOA-Seabirds. Concerning research aspects, New Zealand has conducted additional research to better define Black Petrel distribution and overlap with fisheries, reviewed inputs to the seabird risk assessment (**SBWG6 Inf 09**), continued its program of research to understand the demographics of at-

risk species, and the effectiveness of mitigation techniques (**SBWG6 Inf 01** and **02**). The three fishery management groups have developed operational plans that include; improving monitoring of fisheries, refining or developing individual vessel management plans, supporting Liaison officer programs to engage, educate and aid fishers, conduct education programs in conjunction with Southern Seabird Solutions, and conduct mitigation trials for surface longline fisheries. In the North east of NZ where significant levels of risk are posed to black petrels and flesh footed shearwaters, a collaborative approach is being developing to find solutions. This collaborative group includes representatives of commercial and recreational fishers, government, non-governmental groups, and Maori interests. Next steps are; to refine the seabird risk assessment, conduct an assessment of the potential risk fisheries outside the NZ EEZ pose for NZ breeding seabirds, develop bycatch reduction targets and develop species and fisheries specific plans for higher risk species.

The UK reported that the NPOA-Seabirds for trawl fisheries in the Falkland Islands (Islas Malvinas) [3] was due for revision in 2013. The revision is currently underway, the first draft of which is likely to be completed by December 2014. The NPOA-Seabirds longline for the Falkland Islands (Islas Malvinas) [3] was revised previously. This revision was adopted and published in December 2011.

The United States published earlier this year a report on the implementation of its National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries. The report highlights advancements made by the United States toward the objectives of the 2001 U.S. NPOA-Seabirds. Since 2001, the United States has improved research, outreach, education, and domestic management of seabird bycatch, resulting in a significant decrease in seabird bycatch in its domestic fisheries. The report is available at *http://www.nmfs.noaa.gov/ia/species/seabirds/seabirds.html.*

The European Commission approved in November 2012 an "Action Plan for reducing incidental catches of seabirds in fishing gears" (EU-PoA), as a first and sound step to address a long overlooked problem in EU waters. The EU-PoA seeks to provide a management framework to "*minimise seabird bycatch to as low levels as are practically possible*" in EU waters and beyond (external EU fleet). This is in line with the focus on ecosystem management of the new Common Fisheries Policy (CFP), and is also consistent with the FAO IPOA/NPOA-Seabirds. The plan recommends measures to improve the evaluation of seabird bycatch, and to test and implement mitigation measures whenever necessary. The document can be found in *http://ec.europa.eu/fisheries/cfp/fishing_rules/seabirds/seabirds_communication_en.pdf*

Australia advised that it has now published its revised Threat Abatement Plan 2014 for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations. This plan is complementary with FAO's approach to National Plans of Action, as it applies to oceanic longline fisheries in Australian jurisdiction. The threat abatement plan takes account of new and improving knowledge about mitigation seabird bycatch, allows for independent monitoring of fisheries including via electronic monitoring systems and introduces an individualised approach where management responses are required, among other innovations.

[3] "A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Islas Malvinas), South Georgia and the South Sandwich Islands (Islas Georgias del Sur e Islas Sandwich del Sur) and the surrounding maritime areas"

Argentina reported that its NPOA-Seabirds is subject to periodical revisions, through National Workshops where all actors involved participate. Reports of these Workshops are publicly available through official web sites. Likewise, information on the Argentine NPOA-Seabirds is included in Argentina's National Implementation Reports to ACAP. In order to avoid duplication of work, Argentina suggests that either Parties identify in their NIRs those actions related to the implementation of their NPOAs, or the Secretariat incorporates a specific item of the NIR to highlight actions associated to the implementation of NPOAs.

South Africa reported that its NPOA-Seabirds, which was released in August 2008, is due for review and this review is currently being discussed.

The Working Group noted that there is some duplicity in presenting papers with information on NPOAs, considering that most of the information is already presented in the Party Implementation Reports.

A recommendation was made to conduct a comprehensive review of the status and implementation of NPOA-Seabirds adopted by ACAP Parties and other Range States. This review should consider, *inter alia*, the extent to which these plans conform to the latest (2009) FAO best practice technical guidelines for reducing incidental catch of seabirds in capture fisheries. The Working Group noted that Barry Baker had initiated a process to conduct such a review, and that the intersessional process should build on that work. It was also proposed that this work could provide an opportunity for an ACAP secondment.

ADVICE TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. endorse the proposed intersessional work to conduct a comprehensive review of the status and implementation of NPOA-Seabirds adopted by ACAP Parties and other Range States;
2. encourage all ACAP Parties and collaborating Range States to adopt, implement and review NPOA-Seabirds and to ensure that these are aligned with the 2009 FAO Technical guidelines on best practices to reduce incidental catch of seabirds in capture fisheries.

13. LISTING OF SPECIES ON ANNEX 1

AC8 Doc 24 outlined proposed criteria for listing and delisting species on Annex 1 of the Agreement. At AC7 there was a request to develop clear criteria to guide the listing and delisting of species in light of the limited resources of the Agreement, and the large number of potential candidate species. The paper suggested that six of the eight criteria presented in AC3 Doc 18 are retained when evaluating amendments to Annex 1, as IUCN list took into consideration population size and trend. A number of revisions had been made to the proposed process following review at PaCSWG2, and these were supported by the Working Group. In addition to the intersessional review of taxonomy proposed at PaCSWG2, the Working Group agreed that it would be a timely opportunity to review the at-sea threats scores, and where appropriate the scores for the 'migratory' criterion.

ADVICE TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. adopt the revised criteria for listing and delisting species in order to inform decisions on listing or delisting species on Annex 1 of the Agreement;
2. support intersessional work to review and update the 'at-sea threats' scores, and where appropriate, the 'migratory' scores that form part of these criteria.

14. PRIORITY ACTIONS FOR CONSERVATION MEASURES

AC8 Doc 14 outlined intersessional work undertaken since SBWG5 to update the data underpinning the framework for identifying ACAP conservation priorities. The Working Group reviewed in detail the changes proposed by Parties to the at-sea priorities data. These changes included correction of errors, standardising anomalies, better reflecting current levels of fishing effort in some fleets, and redefining some fisheries. The Working Group supported using these amended input data for generating updated prioritisation outputs.

SBWG6 Doc 17 presented an analysis of the at-sea distribution and long-term changes in the demography of Wandering and Grey-headed Albatrosses from South Georgia (Islas Georgias del Sur) [3] concerning climate and fisheries effort. The study was considered by members to be a valuable illustration of the impacts of fisheries. It was suggested that the situation as described for the Wandering Albatross, in which the rapid decline from the late 1990s to the late 2000s was attributed to the removal, without replacement, of just 95 breeding birds per year, could be used as a means of drawing attention to the seabird bycatch issue generally, by focusing on a single, iconic species. In addition, it could be used to advocate for increased bycatch observer coverage and greater monitoring of compliance in the area of the subtropical convergence, where there is very high level of seabird-fisheries interaction. There was a very high overlap between the distribution of breeding Wandering Albatrosses in the southwest Atlantic and longline vessels from Chinese Taipei in most years, stressing the importance of engaging with this fleet. Other fisheries that overlapped with Wandering Albatrosses were those from Brazil, Uruguay, Spain and Japan. The distribution of Wandering Albatrosses also overlapped with Portuguese longline fisheries in one year, but this was an unusual situation related to a low overall effort. The unknown extent of intentional take in fisheries, such as squid jigging was also discussed.

15. PROGRESS REPORT FOR ACAP FUNDED PROGRAMMES

AC8 Inf 01 provided a summary of outcomes and progress achieved with conservation projects funded through the Advisory Committee's grants scheme between 2009 and 2012. **AC8 Inf 02** detailed the conservation projects and secondments granted in 2013. The Working Group noted the good progress made with projects funded through the ACAP grant and secondment scheme and expressed its support for the grants scheme's operations.

16. TOOLS AND GUIDELINES

16.1 Hook removal guide

The Secretariat reported that the ACAP hook removal guide was finalised some months ago following feedback received at SBWG5 and intersessionally and is now available on the ACAP website along with other conservation guidelines. Working Group members are encouraged to use this resource and link from their websites where possible. Files for commercial quality printing in A3 and A4 format are also available from the Secretariat. French, Spanish, Portuguese, Korean, Japanese and Chinese versions of the guide will be available later this year.

16.2 Photo identification guide for bycaught seabirds

The ACAP Photo ID guide for bycaught seabirds drafted with the help of the Japanese National Research Institute of Far Seas Fisheries has been finalised in the intersessional period and is awaiting further graphic development. The guide includes a feather collecting protocol for genetic analysis. This aspect of the ID guide was discussed in PaCSWG2 in the context of harmonising protocols for biological sampling in general, as well as the use of those samples. Progressing this work has been allocated to the PaCSWG Work Programme. The guide would still benefit from additional photos of bycaught and at-sea birds for a number of species, and meeting participants were encouraged to submit photos for those species to the Secretariat. The ID guide should be available from the ACAP website by early 2015 and will also be translated into Spanish and French as well as other languages as relevant for RFMO fishing fleets.

17. REVIEWS AND INFORMATION

17.1 Review paper on the conservation status, threats and priorities for albatrosses and large petrels

The Working Group was informed about the current status of a manuscript that collates information on the taxonomy, distribution, population trends and threats (at sea and on land), and conservation of ACAP species. The intention is to submit this multi-authored review by the end of 2014.

17.2 World Seabird Conference

The Chair of the Advisory Committee informed the Working Group that a joint ACAP-BirdLife symposium proposal on international agreements and seabird conservation is being finalised for submission to the Scientific Committee of the 2nd World Seabird Conference. The conference will take place from 12-16 October, 2015 in Cape Town, South Africa.

18. SBWG WORK PROGRAMME

Section 3 of the Advisory Committee Work Programme, dealing with seabird bycatch, was reviewed for the current triennium (2013-2015) and the next triennium (2016-2018). Revised

versions of these Work Programmes (**AC8 Doc 16** and **17** respectively) were prepared for consideration by the Advisory Committee.

19. ADOPTION OF THE REPORT

This report was prepared for consideration by the Advisory Committee.

20. CLOSING REMARKS

The Convenor thanked the Vice-convenors for their assistance, Members and Observers for their valuable contributions to the meeting and in developing the report, and the authors of the papers submitted for consideration. The Convenor also thanked Uruguay and the ACAP Secretariat for providing an excellent venue and facilities for the meeting. The Convenor thanked the ACAP Science Officer, Wiesława Misiak, for her valuable work in support of the Working Group, both intersessionally and during the meeting. Sandra Hale and Cecilia Alal were gratefully acknowledged for their interpretation services during the meeting. The Members also thanked the Convenor and Vice-convenors for their leadership and commitment in progressing the work of the Working Group.

ANNEX 1. LIST OF SBWG6 MEETING PARTICIPANTS AND NON-ATTENDING SBWG MEMBERS

SBWG Members	
Anton Wolfaardt	SBWG Convenor
Igor Debski	Department of Conservation, New Zealand (Vice-convenor)
Tatiana Neves	Projeto Albatroz, Brazil (Vice-convenor)
Jorge Azócar	Instituto de Fomento Pesquero, Chile
Jonathon Barrington	Australian Antarctic Division, Department of the Environment, Australia
Johannes De Goede	Department of Agriculture, Forestry and Fisheries, South Africa
Andrés Domingo	Dirección Nacional de Recursos Acuáticos, Uruguay
Marco Favero	Instituto de Investigaciones Marinas y Costeras (CONICET), Argentina
Elisa Goya	IMARPE, Peru
Sebastián Jiménez	Dirección Nacional de Recursos Acuáticos, Uruguay
Edward Melvin	Washington Sea Grant, USA
Ken Morgan	Environment Canada, Canada
Cleo Small	BirdLife International
Ben Sullivan	BirdLife International
Advisory Committee Members	
Azwianewi Makhado	Department of Environmental Affairs, South Africa
Observers to SBWG6	
Joanna Alfaro-Shigueto	Pro-Delphinus, Peru
Javier Arata	Instituto Antartico Chileno (INACH), Chile
Jose Manuel Arcos	SEO/BirdLife
Nigel Brothers	Humane Society International & American Bird Conservancy
Marcel Calvar Agrelo	Ministerio de Ganadería, Agricultura y Pesca, Dirección General de Recursos Naturales Renovables, Uruguay
Beth Flint	U.S. Fish and Wildlife Service, USA
Rodrigo Forselledo	Dirección Nacional de Recursos Acuáticos, Uruguay
Esteban Frere	BirdLife International
Caroline Icaza Galarza	Subsecretaría de Gestión Marina y Costera, Ministerio del Ambiente, Ecuador
Mi Ae Kim	NOAA Fisheries, USA
Jeffrey Mangel	Pro-Delphinus, Peru

Gabriela Navarro	Ministerio de Agricultura, Ganadería y Pesca, Argentina
Fabiano Peppes	Projeto Albatroz, Brazil
Richard Phillips	British Antarctic Survey, United Kingdom
Joost Pompert	United Kingdom
Rodolfo Sánchez	Ministerio de Relaciones Exteriores y Culto, Argentina
Rodrigo Sant'Ana	Projeto Albatroz, Brazil
André Santoro	Projeto Albatroz, Brazil
Anne Saunders	Joint Nature Conservation Committee, United Kingdom
Augusto Silva-Costa	Projeto Albatroz, Brazil
David Stroud	Joint Nature Conservation Committee, United Kingdom
Leo Tamini	BirdLife International
Andrew Torres	NOAA Fisheries – PIRO, USA
Nathan Walker	Ministry for Primary Industries, New Zealand
Oliver Yates	BirdLife International
Secretariat	
John Cooper	Information Officer
Wiesława Misiak	Science Officer
Warren Papworth	Executive Secretary
Juan Pablo Seco Pon	AC8 Staff
Interpreters	
Sandra Hale	OnCall Interpreters and Translators
Cecilia Alal	OnCall Interpreters and Translators

Non-attending SBWG members	
Paul Brickle	University of Aberdeen, United Kingdom
Svein Løkkeborg	Institute of Marine Research, Norway
Kim Rivera	NOAA Fisheries, United States of America
Graham Robertson	Australian Antarctic Divison, Australia
Ramiro Sanchez	Subsecretaria de Pesca y Acuicultura, Argentina
Roberto Sarralde	Instituto Español de Oceanografía, Spain
Mark Tasker	Joint Nature Conservation Committee, United Kingdom

ANNEX 2. REVISED INFORMATION FOR 'SIDE-SETTING' IN THE ACAP REVIEW AND SUMMARY BEST PRACTICE ADVICE DOCUMENTS FOR PELAGIC LONGLINE FISHERIES

5. Side-setting with line weighting and bird curtain

Scientific evidence for effectiveness in pelagic fisheries

Research results indicate that side-setting was more effective than other simultaneously trialed mitigation measures, including setting chutes and blue-dyed bait, in a single pilot scale trial (14 days; Gilman *et al.,* 2003). It should be noted that these tests were conducted with an assemblage of surface-feeding seabirds, and this method requires testing in the Southern Ocean with diving species and at a larger scale. Preliminary trials suggest that this method is operationally feasible on larger vessels (Yokota and Kiyota, 2006).

Side-setting **must** be used in combination with ACAP best practice recommendations for line weighting in order to increase sink rates forward of the vessel's stern, and hooks should be cast well forward of the setting position, but close to the hull of the vessel, to allow hooks time to sink as far as possible before they reach the stern. Bird curtains, a horizontal pole with vertical streamers, positioned aft of the setting station, may deter birds from flying close to the side of the vessel. The combined use of side-setting, line weighting and a bird curtain should be considered as a single measure.

It was agreed to revise Section 5 of the 'ACAP Review of Seabird Bycatch Mitigation Measures for Pelagic Longline Fisheries' with the following text:

5. Side-setting with line weighting and bird curtain

Scientific evidence for effectiveness in pelagic fisheries

Proven as an effective mitigation measure in the Northern Pacific. Effectiveness in Southern Hemisphere fisheries has not been researched and consequently it is not recommended as a proven mitigation measures in these fisheries at this time. (Brothers & Gilman 2006; Yokota & Kiyota 2006).

Caveats /Notes

Hooks must be sufficiently below the surface and protected by a bird curtain by the time they reach the stern of the vessel. In Hawaii, side-setting trials were conducted with a bird curtain and 45-60 g weighted swivels placed within 0.5 m of hooks. Japanese research concludes it must be used in combination with other measures (Yokota & Kiyota 2006). Not tested in Southern Hemisphere fisheries where seabird abundance is higher and secondary ingestion (hooks retrieved by diving birds and secondarily attacked by surface foragers) is more important. Hence, it cannot be recommended for use in these fisheries at this time.

Need for combination

Lines set from the side of vessels must be appropriately weighted in accordance with ACAP best practice advice and protected by an effective bird curtain.

Research needs

Currently untested in Southern Hemisphere fisheries against assemblages of diving seabirds (e.g. *Procellaria* sp. Petrels and *Puffinus* sp. Shearwaters) and albatrosses - urgent need for research.

Minimum standards

Clear definition of side-setting is required. Hawaiian definition is a minimum of only 1 m forward of the stern, which is likely to reduce effectiveness. The distance forward of the stern refers to the position from which baits are manually deployed. Baited hooks must be thrown by hand forward of the bait deployment location if they are to be afforded “protection” by being close to the side of the vessel.

Implementation monitoring

Requires fisheries observers or video surveillance.