 <p>Agreement on the Conservation of Albatrosses and Petrels</p>	<p style="text-align: center;">Ninth Meeting of the Advisory Committee <i>La Serena, Chile, 9 – 13 May 2016</i></p> <p style="text-align: center;">Report of Seabird Bycatch Working Group</p> <p style="text-align: center;"><i>Seabird Bycatch Working Group</i></p>
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Report of the Seventh Meeting of the Seabird Bycatch Working Group, La Serena, Chile, 2 – 4 May 2016

PURPOSE

This Report documents discussions and recommendations of the Seventh Meeting of the Seabird Bycatch Working Group (SBWG), held in La Serena, Chile, from 2 – 4 May 2016.

1. INTRODUCTION

The Seabird Bycatch Working Group Convenor, Anton Wolvaardt, 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

The Convenor reported the addition of three new members to the Working Group since SBWG6: Alexandre Marques was nominated by Brazil, Gabriela Navarro was nominated by Argentina and Eric Gilman (Hawaii Pacific University) was nominated by the Convenor as an expert member. The new members were welcomed to the Working Group and encouraged to participate actively in its work. Current membership of the Seabird Bycatch Working Group is included in **ANNEX 1**.

The Convenor of the Working Group brought information concerning conflicts of interest to the attention of participants for their consideration and action at the beginning and during the course of the meeting. Concerning Agenda Item 7, Jonathon Barrington (Australia), author of **SBWG7 Doc 09** and **SBWG7 Doc 10**, and presenter of **SBWG7 Inf 06**, and Barry Baker, author of **SBWG7 Inf 07**, advised that while neither had any actual conflict of interest concerning matters considered in these documents, to avoid concern arising about any potential conflict of interest they would not participate in the making of recommendations and related matters arising from the documents. The Working Group noted that at the relevant time, these Working Group members recused themselves.

3. ADOPTION OF THE AGENDA

The Convenor introduced the Agenda (**SBWG7 Doc 01**) and thanked those who offered to serve as rapporteurs. With the inclusion of one additional item under Agenda Item 22 (Any Other Business) on interactions of seabirds with Bird Scaring Lines, the Working Group adopted the agenda.

4. UPDATE FORMAT AND PRESENTATION OF ACAP BEST PRACTICE ADVICE DOCUMENTS RELATING TO 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 bycatch 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. Prior to SBWG6, an intersessional review of ACAP's technical review and best practice advice documents highlighted a number of areas in which the presentation of the information could be improved.

SBWG7 Doc 16 provided a revised version of the Review and Best Practice Advice documents for pelagic longline fisheries (as a pilot), and outlined the guiding principles for the proposed revisions. These included clear, efficient and consistent presentation of information, ensuring that references are correct and up to date, clearer definition of all terminology, links to the relevant Seabird Bycatch Mitigation Fact Sheets, inclusion of a section outlining the ACAP criteria for assessing bycatch mitigation measures, and the inclusion of a category for measures that show potential but which are still under development. The paper also recommended that the review and best practice advice components be combined into a single document.

The Working Group agreed that the revised format of the ACAP Review and Best Practice Advice documents improved the presentation of information in these documents. The Working Group highlighted the importance of ensuring that any changes made to these documents are also made to the related Bycatch Mitigation Fact Sheets. The Working Group also noted the importance of not losing the 'paper trail' explaining the rationale for changes made. A breakout group was established to discuss how best to align or integrate the ACAP Review and Best Practice documents with the Mitigation Fact Sheets, and to avoid unnecessary duplication. The Working Group recommended that rather than integrating the ACAP review and advice documents with the Mitigation Fact Sheets, these are retained as separate documents with appropriate links between them. The Working Group further recommended that when the Mitigation Fact Sheets are next due for revision (anticipated in 2 – 3 years), they be simplified by, for example, removing references to scientific studies and other information not considered necessary to support practical application. In this way, the ACAP review and best practice advice documents will provide the details of the scientific assessments and review of the efficacy of bycatch mitigation measures, and the Mitigation Fact Sheets will serve as complementary tools to support the practical use of bycatch mitigation measures through outreach to fishers. Finally, the Working Group supported the revised format proposed in **SBWG7 Doc 16** for the review and best practice advice documents for mitigating seabird bycatch in pelagic longline fisheries, and that this revised format should be extended to the remaining Review and Best Practice Advice documents (i.e. for demersal longline and trawl fisheries).

RECOMMENDATIONS TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. Endorses the revised format of the ACAP Review and Best Practice Advice documents.
2. Endorses the proposal to simplify the BirdLife/ACAP Mitigation Fact Sheets when the current Fact Sheets are formally revised (anticipated in 2-3 years).

5. SEABIRD BYCATCH MITIGATION IN DEMERSAL LONGLINE FISHERIES

5.1 Review recent developments in mitigation research and update best practice advice

Three information papers were submitted for consideration by the Working Group.

SBWG7 Inf 02 described sink profiles for small demersal longline vessels in New Zealand that use subsurface floats and reported on the effects of different float configurations. Extending float ropes produced faster and more even sink profiles, reducing sink times for fishing configurations where the line is floated above the seabed.

SBWG7 Inf 03 reported that floated longlines sank below the reach of albatrosses (2 m depth) 2.3 times further astern than gear without floats (68.8 m \pm 37.8 95% CI) in the US West Coast demersal longline fishery for sablefish, well beyond the protection afforded by the bird-scaring lines. Albatross attacked floated longlines at rates ten times more (2.7 attacks/1000 hooks, 0.48 – 4.45 95%CI) than longlines without floats (0.20 attacks/1000 hooks, 0.01 – 0.36 95% CI). Night setting was, however, effective at reducing bycatch on vessels that used floated longlines.

SBWG7 Inf 08 (also relevant to Agenda item 7) reported on designs of bird-scaring lines that were tested in the New Zealand demersal longline vessels under 28 m overall length. The design aspects considered included deployment poles, streamer materials and terminal sections used for the creation of drag. Bird-scaring line performance was characterised primarily in terms of the aerial extent each design achieved, streamer behaviour, tracking efficacy, and the amount of water disturbance created at the end of the line. Next steps identified included assessing the performance of the new bird-scaring line designs in deterring seabirds from the setting area.

The Working Group noted that the sink rate of the slowest sinking hooks, where seabird bycatch is most pronounced, is the key factor to consider when prescribing mitigation measures for demersal longline fisheries using floated gear. The slowest sink rates are associated with deployment of buoys in demersal fishing gear. Increasing the length of buoy lines improves the sink rate. Where buoy lines are operationally problematical due to the fishing gear configuration, then extra space (5 m or more) on either side of buoys should be left without baited hooks to reduce the risk of seabird bycatch on the slowest sinking sections of the line. However, the relationship between line weighting and buoy line lengths to achieve a target fishing depth at maximum sink rate is not well understood, and further work is therefore required to investigate this balance.

The Working Group recognised that the practice of coiling buoy lines around floats is a potential means of reducing entanglements when deploying floats and the authors of **SBWG7 Inf 02** offered to provide specific details of operational procedures in this respect.

The Working Group noted that longer float lines may result in increased entanglement of marine turtles, so further work should specifically report any increased risk to other taxa.

The experiments on bird-scaring line designs for small longline vessels was welcomed, and the Working Group encouraged further testing of the designs in commercial conditions, including the extent to which the bird-scaring lines reduce bycatch.

Finally, the Working Group noted that the report in **SBWG7 Inf 03** of the Pink-footed Shearwater caught in 2014 likely represents the first bycatch record of this species in US waters.

5.2 Update mitigation fact sheets

There were no recommended changes to mitigation fact sheets associated with demersal longline fisheries.

5.3 Mitigation research priorities

The Working Group recognised that work is ongoing to identify mitigation measures that improve the sink rate of baited hooks on floated longlines, and that this should remain a priority. Parties were encouraged to collaborate on intersessional initiatives to advance this research. Investigation of the effect of using longer buoy lines to increase sink rates, seabird bycatch and fish catch rates, plus the use of line weighting configurations to improve sink rates without jeopardising the fishing gear position at depth were identified as important considerations within the scope of the research priority for this gear type.

RECOMMENDATION TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. Encourages Parties and others to prioritise research to identify mitigation measures that improve the sink rate of baited hooks on floated longlines, and to keep the group informed of developments associated with research on seabird mortality and mitigation in demersal longline fisheries.

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. Three information papers were considered by the Working Group.

SBWG7 Inf 04 provided an overview of a New Zealand project developing a prototype novel design for a bird baffle for use on offshore trawlers. Preliminary results indicated that the prototype seemed effective in deterring *Thalassarche* albatrosses from approaching the enclosed warp area except when there was significant discharge of offal, though it did not

exclude smaller seabirds (e.g. White-chinned Petrels) from the enclosed area. A caveat noted by the Working Group was that approximately 3 m of trawl warp protruded from this enclosed area during the reported trials. The addition of booms was mentioned by the Working Group as a potential aid to the bird bafflers

SBWG7 Inf 05 presented data on the use of third-wire (net monitoring) cable used on the Argentine Sea freezer trawl fleet and its potential impact and testing of mitigation measures aimed at reducing seabird bycatch. The results presented here indicated that *i)* a significant proportion of the freezer trawl fleet operating in the study area currently uses third-wire cables during its fishing operations, *ii)* the bulk of the seabird bycatch occurred in the third-wire when mid-water trawl net was used, and *iii)* the use of bird-scaring lines reduced the mortality of seabirds, although this mitigation measure needs further readjustments due to potential entanglements with the third wire. The Working Group noted the existence of undetected (cryptic) mortality was an important consideration with this type of gear and should be acknowledged and taken into account in future studies.

SBWG7 Inf 25 presented data on a discard management trials conducted in the Falkland Islands (Islas Malvinas)¹ bottom trawl fishery as means of limiting foraging opportunities to seabirds. The preliminary results presented in this paper showed that the waste discard management scheme has a significant impact on reducing seabird abundances including within the warp-water interface, i.e. danger area. A stated caveat is that discard storage facility design and location aboard the vessels needs to be carefully considered in future trials.

The Working Group noted several limitations encountered when installing ofal management facilities on vessels, such as the maximum holding period, which in turn may affect the maximum size of holding tank(s) and the location of holding tank(s) aboard the vessels. This highlighted the importance of considering ofal management in the design and construction of new vessels, which could include built-in discharge management and other mitigation options. This is an area not yet explored by the Working Group, but in the long term this approach may be very important if accompanied with incentives for ship-building companies to construct bird-safe vessels.

The Argentine Delegation objected to the presentation of document **SBWG7 Inf 25**, taking into account that this document includes several jurisdictional references to a territory that is in sovereignty dispute recognized by the United Nations and ACAP. The Argentine Delegation also referred to the necessity to continue the discussions previously maintained related to bibliographic references, stressing the major efforts made by scientists and technicians in the use of double place names.

The UK member of the Working Group indicated that it was fully within his right to present any paper to the group, and felt this paper was especially useful in light of the topic addressed.

The Working Group concluded that the existing ACAP trawl mitigation best-practice summary advice be modified to provide clearer advice on mitigation methods relevant to

¹ 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.

different types of cables. In particular, when considering net monitoring cables, the Working Group recommended that clear advice be provided to highlight that not using a net monitoring cable be the preferred approach, and existing mitigation advice be applied only where this is not practicable. The primary nature of offal management as a mitigation strategy was also highlighted, and the Working Group agreed that this advice be presented prior to options related to cable strike and net entanglement. A breakout group updated the best practice advice for reducing the impact of pelagic and demersal trawl gear on seabirds, which is included in **ANNEX 2**. The Working Group also noted that during the intersessional work to update the ACAP advice and review documents for trawl gear (as recommended in Agenda Item 4) particular attention be paid to knowledge available on paravanes, and using terminology in the documents that are consistent with the other fishing methods.

6.2 Update mitigation fact sheets

The Working Group noted that the proposed changes to the best-practice advice for mitigating seabird bycatch in trawl fisheries were already mostly captured in the relevant Mitigation Fact Sheets, and so there is no need to update them.

6.3 Mitigation research priorities

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

- i. Options to reduce seabird interactions with cables, in particular net monitoring cables, 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), including the potential to use electronic monitoring of cable strikes.
- iv. The applicability of net binding in pelagic fisheries.
- v. Methods and designs to improve efficacy of bird-scaring devices in reducing seabird interactions with trawl gear.

RECOMMENDATIONS TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. Endorses clarifications about the recommended best practice advice for reducing impact of pelagic and demersal trawl gear on seabirds (included in the revised advice provided in **ANNEX 2**).
2. Encourages implementation of the identified research priorities for trawl gear mitigation identified in Section 6.3.

7. SEABIRD BYCATCH MITIGATION IN PELAGIC LONGLINE FISHERIES

7.1 Review of bycatch mitigation measures and best practice advice

Agenda Item 7 focused on initiatives specific to seabird conservation in pelagic longline fisheries. The six Working Group documents and two information papers were divided into three categories: branch line weighting, hook protection devices and seabird capture during hauling operations. No papers were received on bird-scaring lines or night setting.

7.1.1 Branch line weighting

SBWG7 Doc 08 reported on research conducted by the Australian Maritime College on the relative safety of the three line weighting specifications currently recommended by ACAP as best practice, and three line weighting specifications proposed in **SBWG7 Doc 07** (see below). The researchers simulated fly-backs and predicted the injury to the head and chest using the Blunt Trauma Criterion. The research included three different sizes of weighted swivels (45 g, 60 g and 100 g) and two different sizes of two brands of sliding leads: GloLeads (40 g and 60 g) and Lumo Leads (45 g and 60 g) that were positioned at different distances from the end of the branch line. The incidence of fly-backs and safety consequences were strongly influenced by the type of weights used and their distance from the hook. Under the conditions used to simulate fly-backs in the study, the current ACAP specification of greater than 45 g of weight within 1m of the hook, and the proposed specifications of greater than 40 g at the hook and greater than 60 g within 1 m of the hook were considered safe, but only if sliding leads are used. Weights placed at or close to the hook slid off more quickly and further from vessels than those placed further from the hook. Almost all (with one exception) of the sliding weights placed at 3.5 m from the hook remained on the branch line following simulated fly-back incidents.

The Working Group identified a number of potential areas in which this safety research could be extended, including the use of 80 g weights (which were not available at the time of trial) and testing hook tear-outs where the line is not cut. The collection of video footage to illustrate the way in which sliding weights operate was encouraged, as this could be useful outreach material for fishers. The Working Group encouraged the collection of further information on the incidence of fly-back events, either through observer programmes or by electronic monitoring, and encouraged development of protocols to monitor these events. It was also noted that traditional fixed swivel weights have been used extensively in some fisheries without recorded safety incidents.

SBWG7 Doc 07 recommended changes to ACAP best practice advice on line weighting specifications based on statistical analysis of sink rate data previously provided in **SBWG6 Doc 13**. The analysis completed step 1 of the three-step research programme adopted at AC8 to re-evaluate branch line weighting configurations for pelagic longline fishing. On the basis of the statistical analysis, **SBWG7 Doc 07** reported that baited hooks on shorter leaders (the length of monofilament between the hook and the weight) using the identified line weighting configurations sank faster than on longer leaders. The statistical analysis was used to categorise branch line weighting regimes based on sink rates. On the basis of the results, **SBWG7 Doc 07** recommended replacing the existing specifications of ACAP best practice advice on branch line-weighting in pelagic longline fisheries with the following: (1) 40 g or greater attached at the hook; or (2) 60 g or greater attached within 1 m of the hook; or (3) 80 g or greater attached within 2 m of the hook.

Although no new information was provided on seabird interactions or catch rates of target fish species, **SBWG7 Doc 07** noted that preliminary research findings in the Uruguayan swordfish fishery demonstrated that a reduction in leader length from 4.5 m (75 g) to 1 m (65 g) reduced seabird mortality by about 50 per cent in the absence of other mitigation (night setting, bird-scaring lines) (**SBWG5 Doc 49**). The authors noted that compared to the line weighting regimes included in the current ACAP best practice advice, the faster sink rates of the proposed weighting regime safeguard against any non-compliance in the use of bird-scaring lines or night setting.

SBWG7 Doc 14 reported on at sea trials conducted in 2015 in the Brazilian pelagic longline fishery to compare catch rates of seabirds, target fish species and sink rates using two different configurations of sliding weights (60 g Lumo Lead 1 m from the hook and 60 g Lumo Lead 3.5 m from the hook) and the traditional weighting system (60 g weighted swivel 3.5 m from the hook). All fishing took place at night, without bird-scaring lines. There was no difference in catch rates of target species among the three treatments. The sink rate of the 60 g Lumo Lead placed 1 m from the hook was faster than the other two treatments, and resulted in significantly lower seabird bycatch rates (0.11 birds/1000 hooks, as opposed to 0.33 and 0.85 birds/1000 hooks treatments with Lumo Leads 3.5 m from the hook, and weighted swivels 3.5 m from the hook, respectively).

The Working Group noted the significance in the reduction of seabird bycatch using weights at 1 m compared to 3.5 m from the hook reported in **SBWG7 Doc 14**, which is consistent with the recommendations on best practice advice proposed in **SBWG7 Doc 07**. The Working Group discussed the practicality of using a 40 g weight at the hook, and noted that in many cases it would be operationally more feasible to place the weight a small distance from the hook. Consequently, the Working Group agreed that the weighting configurations recommended in **SBWG7 Doc 07** should be modified by replacing the configuration of 40 g or greater at the hook with 40 g or greater within 0.5 m of the hook, and that modified set of three weighting options be recommended as best practice mitigation, to be used in combination with night setting and bird-scaring lines. It was also noted that any differences in bird interaction between the three weighting options are not fully understood, and further work should be encouraged to quantify this, and findings reported back to the Working Group.

SBWG7 Inf 06 reported on the further development and results of at-sea trials of the Hook Pod conducted between 2011 and 2015 on pelagic longline vessels in Australia, South Africa and Brazil. Of the 62 000 hooks observed in the study, only a single mortality was recorded using the Hook Pod, compared to 24 on the control branch lines of standard gear (weighted swivels ranging from 60-80 g placed at 2-7 m from the hook), equating to bycatch rates of 0.034 and 0.77 birds/1000 hooks, respectively. In addition to protecting the hook, the weight built into the hook pod ensures a rapid sink rate, which was significantly faster than the control (60 g at 3.5 m from the hook). The Hook Pod did not negatively affect the catch rates of target species.

SBWG7 Doc 10 provided an assessment, on the basis of the results presented in **SBWG7 Inf 06**, of the Hook Pod against the six best practice seabird bycatch mitigation criteria developed by the SBWG for assessing and recommending best practice advice on seabird bycatch mitigation measures.

The Working Group discussed the merits of recommending the Hook Pod as a stand-alone best practice mitigation option for pelagic longline fisheries. The Working Group noted the significant reduction in seabird mortality that was found when using the Hook Pod, but some concerns were expressed that the research to date did not adequately quantify the extent to which the effectiveness of the device was due to the increased sink rate caused by having a 68 g weight at the hook on set, or the protection of the hook point and barb. The possibility for increased rates of bird entanglement was also raised, noting that deployment of the device created a loop of branch line during setting. While acknowledging these concerns, the Working Group agreed that the results presented were sufficient to warrant the recommendation of the Hook Pod as a stand-alone mitigation measure for pelagic longline fishing, noting that it meets the revised ACAP minimum standards for line weighting, and ensures that baited hooks are released beyond the foraging depth of most seabirds (noting that currently the manufacturer sets the Hook Pod to open at 10m but this can be preset to greater depths if required). The Working Group recognized that similar devices may be developed in the future, and noted that the recommendation of such new devices or models by ACAP would be dependent on meeting performance measures, including shielding the hook to a prescribed minimum depth, meeting current best practice line weighting standards and adequate experimental evidence on their effectiveness, efficiency and practicality. The Working Group also discussed how compliance of the use of such devices may be monitored, and encouraged the development of mechanisms, such as a pressure release counter, to determine how many times a device had been activated.

SBWG7 Inf 07 reported the results of at-sea trials conducted in South Africa to test the efficacy the Smart Tuna Hook (STH) in mitigating seabird bycatch. The STH was developed as a 38 g device that attaches to a modified longline hook shielding the point and barb of the hook once it is baited, preventing the hooking of seabirds trying to ingest the bait. However, it was clarified that the device can be fitted to existing traditional hooks. After 10 - 15 minutes of immersion in seawater the shield is released allowing fish to be caught after the baited hook as passed beyond the normal diving depths of most seabirds. In this study, the STH led to a reduction of seabird bycatch of between 81.8% and 91.4% compared to the control treatment, in which conventional (unshielded) hooks were used. In both the experimental and control treatments, vessels used a 80 g weight 3.2 m from the hook, and fished at night. The STH adds an additional 38 g of weight at the hook, and in a separate experiment in freshwater was found to improve the sink rate to 4 m depth by 35% compared to conventionally weighted gear (60 g at 3.5 m from the hook): 0.6 m/s compared to 0.39 m/s. There were no detectable differences in catch rates of target species between the STH treatment and the control.

SBWG7 Doc 09 provided an assessment, on the basis of the results presented in **SBWG7 Inf 07**, of the STH against the six best practice seabird bycatch mitigation criteria developed by the SBWG for assessing and recommending best practice advice on seabird bycatch mitigation measures.

It was noted that the bycatch rate associated with the STH documented in **SBWG7 Inf 07** of 0.059-0.247 birds per 1000 hooks was higher than rates achieved in a number of pelagic longline fisheries. However, these trials were conducted in an area with particularly high bycatch rates using currently adopted mitigation measures, and achieved a significant reduction in seabird bycatch compared to the status quo in that fishery. Similar to concerns noted about the Hook Pod, it was highlighted that research to date did not adequately

quantify the extent to which the effectiveness of the device was due to the increased sink rate caused by having additional weight at the hook on set, or the protection of the hook barb. It was also noted that whereas the attachment pin is designed only to corrode when immersed in seawater, dry storage was recommended for the device prior to deployment. The Working Group also recognized that trials of the STH were less extensive than trials of the Hook Pod, and, ideally, such a device should comply with the revised best practice weighting advice, which would require the device to weigh 40 g or more. While acknowledging these concerns, the Working Group agreed that the STH should be recommended as a stand-alone best practice mitigation measure for pelagic longline fisheries, noting that it meets the revised ACAP minimum standards for line weighting, and ensures that baited hooks are released beyond the foraging depth of most seabirds. The Working Group also recognized that use of the STH would address safety concerns of some fishers regarding fly-back incidents, since the weight of the shield is not present during hauling.

7.1.2 Seabird captures during hauling

SBWG7 Doc 18 reported the results of a study that investigated the incidence of live bird capture during line hauling derived from 80 million observed hooks, on which a total of 4379 birds was caught. Previously, live bird haul captures had been reported from the Hawaiian shallow set fishery, but **SBWG7 Doc 18** showed that such captures are more widespread. Night-setting practices could inadvertently be contributing towards captures of birds during hauling operations, as these would commonly take place during daylight. However, the benefits of night setting in terms of reduced setting-related mortalities are likely to significantly outweigh the haul captures. Noting that 10-19% of haul-captured birds were landed alive, a focus on the safe release of birds would help limit impacts. Possible practices to minimise captures of birds on hauling include side hauling with a branch line length less than the distance from hauling point to stern, and the use of hauling machines to minimise the time taken to haul the branch line. The paper recognised a critical need for better data collection protocols to differentiate between seabirds caught during setting and hauling operations, and provides guidelines on the responsible handling of haul caught seabirds to maximize their post-release survival prospects.

Noting a request made in **SBWG7 Doc 18** for provision of data from New Zealand, Nathan Walker regretted the delay in providing data. Human error in the handling of observer paper forms had resulted in an incomplete observer database in terms of protected species captures. Following a thorough review of observer data from 2002 to 2015, an error in handling of 1.9% of the data forms was identified. Improvements are being made to observer data form handling to reduce the chances of human error in future. In reference to the capture of live seabirds, 28% captured by surface longlining from 2002/03 to 2014/15 were alive and subsequently released. Analysis to date shows that above average numbers of live seabird captures resulted only from large surface longline vessels when the haul occurred during the day or over dawn. Observers considered that some of the live captures had occurred during line soaking, recalling a multiple capture event of Antipodean Albatrosses. New Zealand is planning to undertake research to investigate post-release survival and will report back to the Working Group in future. Other Parties whose observer programmes use paper forms were urged to review the handling and data entry of those forms, and include cross-validation of data to ensure that human error is minimised.

It was noted that publicly available information on live captures in the USA indicates an increase in live captures in recent years, which is worthy of further investigation. Sarah Ellgen indicated that US data could be made available for such analyses, but some data fields recommended in **SBWG7 Doc 18** are not currently collected, and changing observer protocols could be a lengthy process.

The Working Group encouraged Parties and other jurisdictions to analyse existing data and report back to the Working Group, and focus future data collection through observer programmes on relevant data that would allow the distinction between birds caught at the set and those caught during the soak or at the haul, as outlined in **ANNEX 3**. The Working Group noted that in order to confirm whether landed birds were caught during the set, soak or haul, it would be useful for observers to include specific data about the state of life of the caught bird, and if alive, its condition. This would enable a subsequent analysis of data to determine whether the bird was caught during the set, soak or haul. In light of the recommendations provided in **SBWG7 Doc 18** on the handling of live-caught birds to maximize post release survival, the Working Group recommended that ACAP's de-hooking guide be reviewed intersessionally to determine if any updates are required.

7.2 Update Mitigation Fact Sheets

In light of the revised best practice advice on line weighting the Working Group recommended that Mitigation Fact Sheet 8 be updated accordingly. In addition, the Working Group recommended that a new factsheet be developed for hook-shielding devices, trialling a simplified format as discussed in **Agenda Item 4**. The new factsheets for hook-shielding devices should include a cross reference to the revised Mitigation Fact Sheet 8 on branch line weighting in pelagic longline fisheries.

7.3 Mitigation research priorities

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

Weighted branch lines: carry out further collaborative field research on the relationship between the revised ACAP best practice advice concerning line-weighting regimes and resulting seabird mortalities, and/ or seabird attack rates.

Hook-shielding devices: conduct further field research to evaluate the relative contributions of the sink rates and hook protection components of hook-shielding devices in reducing bycatch.

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 activities 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.

Live bird haul capture: investigate the nature and extent of live bird haul capture in pelagic longline fisheries.

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.

Uptake of best practice mitigation measures by fishers: investigate the barriers and drivers relating to the use (or non-use) of ACAP best-practice measures for mitigating seabird bycatch in pelagic longline fisheries.

RECOMMENDATIONS TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. Updates the recommended line weighting of branch lines component of best practice for reducing the impact of pelagic longline fisheries on seabirds replacing the former regime with the following configurations:
 - (a) 40 g or greater attached within 0.5 m the hook; or
 - (b) 60 g or greater attached within 1 m of the hook; or
 - (c) 80 g or greater attached within 2 m of the hook

Fishing operators should take appropriate steps to assess and mitigate the hazard associated with the potential for recoil of the branch line (or 'flyback') in circumstances when there is a 'bite-off' or where the hook is dislodged during hauling.

2. Notes that the updated best-practice advice for mitigating seabird bycatch in pelagic longline fisheries is to use the following three measures simultaneously: branch line weighting (according to the configurations outlined above), night setting and bird-scaring lines.
3. Updates the review and best practice advice for reducing the impact of pelagic longline fisheries on seabirds to include hook-shielding devices as listed in **ANNEX 4**.
4. Encourages implementation of the identified research priorities for bycatch mitigation in pelagic longline fisheries identified in Section 7.3.
5. Endorses the revision of Bycatch Mitigation Fact Sheet 8 on branch line weighting in pelagic longline fisheries to account for the updated weighting configurations and the development of a new factsheet for hook-shielding devices.
6. Endorses the review of the ACAP de-hooking guide.

8. SEABIRD BYCATCH MITIGATION IN GILLNET FISHERIES

There were no Working Group documents considered under this agenda item. Two information papers were considered by the Working Group.

SBWG7 Inf 09 reported that, based on foraging ecology and recorded bycatch events, 12 of the 31 ACAP species are considered susceptible to capture in gillnets. Entanglements have largely been recorded in driftnets. Broadly, bycatch in gillnet fisheries is not presently considered to be a major threat to ACAP species although fisheries operating in the north Pacific, along the Humboldt Current, in the western Mediterranean and eastern Atlantic merit closer monitoring. Recent advances have been made in the testing of gillnet mitigation measures, with both net lighting and high contrast net panels showing some promise in reducing bycatch with minimal effects on target catch.

SBWG7 Inf 10 reported on a study of the ability of Little Penguins to differentiate between three different coloured netting materials (green, clear and orange) under controlled conditions. The study involved a repeated-measures design with penguins exposed to a number of experimental treatments (variously coloured mono-filament threads creating a gillnet mimic) and a control without the threads (no gillnet mimic). The results demonstrated that orange coloured monofilament lines resulted in low collision rates of Little Penguins compared to clear and green coloured monofilament lines. Collision rates were not only high with the clear and green coloured monofilament lines, but it was also found that Little Penguins persisted in attempts to swim through the clear and green monofilament lines after collision, providing an indication of the mechanism by which seabirds are caught in gillnets. It was concluded that gillnets constructed of orange-coloured materials may reduce the

bycatch of penguins and other seabirds in surface or shallow-set gillnet fisheries, but further studies will be required to assess the effect of gillnet colour on catch of target species.

The Working Group recalled the recent global annual estimate of seabird mortality associated with gillnet fisheries of at least 400 000 birds per year (from Zydalis *et al.* 2013), and noted the importance of developing bycatch mitigation tools for these fisheries.

The Working Group discussed the definition of susceptible species, which followed that used by Zydalis *et al.* (2013), based on their foraging behaviour or high incidence of recorded mortalities in gillnet fisheries. The Working Group considered that the definition of susceptible species may need to be reconsidered in the future, when interactions between gillnet fisheries and seabirds are better understood.

The Working Group discussed the results of the use of net material colour as a deterrent and while encouraged by the results, considered that further testing is necessary to assess the utility of net colour in seawater, at depth and any effect on target catch rates.

The Working Group recalled the outcomes of a workshop held in January 2015 to discuss methods of reducing bycatch of seabirds, sea turtles and marine mammals in gillnets. The [report](#) of the workshop notes the paucity of information regarding bycatch rates in gillnet fisheries and recommended that Parties gather further observations in these fisheries.

The Working Group noted observations of bycatch in gillnet fisheries by the Albatross Task Force (ATF) in Chile, which included cormorants, boobies and penguins, but no ACAP species.

8.1 Research priorities

The Working Group recommended the following as research priorities:

- i. Undertake more research with black and white contrasting panels as a potential mitigation measure for gillnet fisheries;
- ii. Investigate the effect of net lights as a measure to reduce seabird interactions
- iii. Investigate effect of net colours in reducing seabird interactions in at-sea fishery operations in varied light conditions and setting depths; and
- iv. Understand the effect of gillnet colour on catch efficiency of target species within an active working fishery.

RECOMMENDATION TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. Encourages Parties and others to prioritise the areas of research identified in Section 8.1 and to keep the group informed of developments in research on seabird mortality and mitigation in gillnet fisheries.

9. ASSESSMENT OF RISKS POSED TO ACAP SPECIES FROM NET FISHING METHODS OTHER THAN GILLNET AND TRAWL

SBWG7 Doc 11 summarised existing literature relating to the interaction of seabirds with purse seine fishing gear and operations. Bycatch in purse seine fisheries includes a range of marine organisms but limited evidence was available to indicate seabirds being recorded as bycatch in this gear type. However, large numbers of Flesh-footed Shearwaters have been caught in a Western Australia purse seine fishery targeting pilchards. This bycatch occurs when fishing effort is in close proximity to breeding grounds and when birds are provisioning chicks, demonstrating that in certain situations and times, seabirds will interact freely with purse-seine gear. Fishing at night and spatial closures would likely eliminate seabird bycatch in the fishery, given the spatial and temporal component of the observed interactions. Close attendance during setting and retrieval of gear during daylight operations has allowed the implementation of mitigation measures, particularly tow-off procedures that remove folds in the nets that can entrap birds, as well as water spraying. These measures have been successful in significantly reducing seabird interaction levels in the Western Australian fishery.

SBWG7 Inf 11 is a review that summarises existing literature relating to the interaction of seabirds with purse seine fishing gear and operations. The review was part of a wider review that the authors prepared in relation to interactions between purse seine gear and a range of non-target taxa, and **SBWG7 Inf 11** has abstracted the information of relevance to seabirds. It details management of seabird interactions in purse seine fisheries via two case studies, and describes mitigation measures that have been developed to reduce the mortality of seabirds, which mainly flow from one fishery.

SBWG7 Doc 20 Rev 1 reported on work to quantify seabird bycatch in small-scale purse seine fisheries in Chile and to find mitigation solutions. Onboard monitoring was conducted between 2013 and 2015, covering a total of 72 fishing sets. The ACAP listed Pink-footed Shearwater was one of the species most frequently caught. The authors identified important bycatch hotspots within different structures of the fishing gear: i) birds are trapped under a ceiling of net mesh due to an excessive hanging ratio in the body of the net; ii) birds are entangled on vertical zipper sections, and iii) horizontal ropes connecting the buoy line with the net body. A purse seine net was modified to reduce the hanging ratio, reduce mesh size of the vertical and horizontal zipper sections for field trials comparing unmodified nets. Simultaneous monitoring of modified and control nets found zero mortality on bycatch hotspots compared with 0.55 birds/set on the control (1.11 birds/trip).

The Working Group commended the Instituto de Fomento Pesquero (IFOP) on the work presented, and encouraged further work towards identifying and testing mitigation solutions for purse seine fisheries. It was noted that there has been interest expressed among other captains and vessel owners in applying this mitigation. The costs of the nets and the mitigation modifications in the Chilean trials were discussed. The Working Group was informed that the costs of this mitigation can potentially be entirely offset by the typical annual net repair process, and that the mitigation can actually represent a cost saving because it entails reducing the amount of net used (and improved fish catch). The urgency for identifying bycatch solutions in the Chilean purse seine fleet was reinforced given the strong overlap with seabird species, particularly the Pink-footed Shearwater.

The Working Group recommended that best-practice mitigation advice be developed for purse seine fisheries based upon the lessons learned in these studies and according to the ACAP best practice mitigation criteria, although it was also noted that this advice may better fit into the small-scale fisheries 'toolbox' approach (**Agenda Item 10, SBWG7 Doc 12**).

RECOMMENDATIONS TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. Encourages further data collection and analysis on the mitigation methods presented.
2. Encourages the development of best practice mitigation advice on purse seine fisheries for the next meeting of the SBWG.

10. ARTISANAL FISHERIES AND SMALL SCALE FISHERIES

SBWG7 Doc 12 recalled that it was agreed at SBWG6 to work towards a model of advice that involves the development of a 'toolbox' of effective mitigation methods for artisanal and small-scale fisheries, rather than a more prescriptive specification. The authors provided the first step of this process to develop a 'toolbox' template, and to include some examples to populate the toolbox to illustrate how it could work in practice. An initial categorization of advice was proposed using two alternative toolbox versions.

The Working Group supported the approach taken and preference was given towards the proposed template in Table 2 of **SBWG7 Doc 12**, structured by fishing method and including colour-coding to highlight the effectiveness in mitigation. The further inclusion of positive practical effects other than those based on mitigation performance (e.g. improving crew safety matters) was suggested. Further intersessional work to finalise and populate the 'toolbox' was recommended.

The Working Group recognised the importance of the social component in addressing conservation matters in these fisheries, as well as the relevance of interacting with other organisations, namely the Inter-American Convention for the Protection and Conservation of Sea Turtles, which has considerable experience in addressing bycatch in small-scale fisheries.

SBWG7 Inf 26 presented a proposed incentive-based bycatch reduction approach to fisheries bycatch. Special mention was made on the benefits of investigating the social component of what drives compliance with bycatch mitigation measures. Although theoretical level economic incentives such as offsets and payments for ecosystem services may have utility as conservation tools in marine settings, the conceptual framework outlined in this document will require further development:

- (i) to avoid conflating terrestrial and marine contexts,
- (ii) to better understand existing incentive-based approaches concerning reducing seabird bycatch at sea, and
- (iii) to identify further opportunities for positive and negative incentives as drivers for behavioural change among fishing operators.

RECOMMENDATION TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. Endorses further intersessional work to finalise and populate the 'toolbox' template for providing mitigation advice in artisanal and small-scale fisheries

11. LASER TECHNOLOGY TO MITIGATE SEABIRD BYCATCH

SBWG7 Inf 12 provided initial results concerning using Class 4 lasers to mitigate seabird bycatch on a trawl vessel operating in the North Pacific Ocean. Seabirds showed no detectable response during daylight hours. Reactions to the laser at night varied between species, and whether the seabirds were feeding in the offal plume or following the vessel. Further investigation is needed to ascertain conditions when using a laser may be effective as a seabird bycatch mitigation tool, e.g. by improving the visual contrast of the laser during the day.

The Working Group noted these preliminary research findings suggested lasers were ineffective in trawl fishing operations as a seabird bycatch mitigation measure. The Working Group agreed to bring the research findings to the attention of the Advisory Committee, and indicate that the Working Group's previous concerns about bird welfare issues remain.

RECOMMENDATIONS TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. Notes SBWG previously 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.
2. Notes preliminary research using lasers in a North Pacific trawl fishery did not show a detectable response in daylight hours, and that reactions to the laser at night varied between species, and whether the seabirds were feeding in the offal plume or following the vessel.
3. Notes that the SBWG has ongoing concerns about the safety and efficacy of laser technology as a seabird bycatch mitigation tool.

12. ACAP PERFORMANCE INDICATORS: SEABIRD BYCATCH

SBWG7 Doc 05 reported intersessional progress made towards the further development of ACAP seabird bycatch indicators, data needs, methodological approaches and reporting requirements. The guidelines in the paper reflect the recommendation made at SBWG6 that instead of providing raw or aggregated data, Parties could submit bycatch estimates that they themselves have derived. The document presents a number of guidelines in support of

the derivation of these estimates. The two main components of the bycatch indicator, and the basis for the submission of estimates from Parties and Range States, are: 1) seabird bycatch rates, and 2) estimates of the total number of birds killed per year per fishery. The paper outlined the basis for a reporting framework and proposed a trial period of reporting by Parties in the lead up to SBWG8 and AC10.

SBWG7 Inf 21 reported that New Zealand has extended its series of bycatch extrapolations to include the 2013/14 fishing year. The most recent set of extrapolations have utilised a simplified extrapolation (strata-based ratio) method that is consistent across all seabird species, which differs from the process used previously. The document noted that New Zealand's quantitative risk assessment (which underpins New Zealand's NPOA-Seabirds) had been re-run in 2015, and further advised the intention to run the assessment again once some aspects of the methods, such as whether seabird population trends can be included, had been reviewed. The paper advised that New Zealand is looking to conduct a quantitative seabird risk assessment, considering the risk to all ACAP species from fishing throughout the southern hemisphere. The current proposal is to replicate New Zealand's quantitative approach based on data available in 2016 and refine it in 2017.

The Working Group welcomed the papers presented and supported the approach outlined for a reporting framework and proposed trial period of reporting by Parties in the lead up to SBWG8 and AC10. Enhancements suggested including recording of data on the haul as well as the set, recalling the recommendations of **SBWG7 Doc 18** (considered under agenda item 6), and providing information on the proportion of vessels in each fishery using different suites of mitigation measures. The potential difficulties in interpreting findings of data analyses undertaken along the lines suggested was noted, and it was agreed that the process finally adopted needed to be transparent, and open to peer-review of results.

Argentina welcomed the work of the authors on **SBWG7 Doc 05** and the important progress made intersessionally, which helped to clearly identify the information actually relevant to ACAP. Two comments were relevant not only to ACAP but also to Parties: Firstly, the levels of observer coverage may vary between fisheries and not always be sufficient to allow the extrapolation required to provide an appropriate estimate for all fisheries. This may potentially result in a reduction of the fisheries reported to ACAP. However, the data template should offer the possibility for reporting observed bird captures for all fisheries, even though a mortality rate or extrapolation to total captures could be made. Some countries make considerable effort to generate data, which could be considered as a signal or indicator of where a problem existed or an opportunity to reinforce those efforts. Additionally, for some fisheries, this is probably the only information that may exist. Other SBWG members endorsed these comments. New Zealand advised that they had tried to account for less-observed fisheries, by pooling data across years.

BirdLife International supported the findings of **SBWG7 Doc 05**, and identified some minor points that will be provided through the intersessional process. They also drew attention to the summary table used by the Commission for the Conservation of Bluefin Tuna (CCSBT) for reporting bycatch, and suggested that this document would be worth future consideration by the intersessional group. BirdLife International further commented that the graphical presentation of bycatch information in **SBWG7 Inf 21** was clear and useful and suggested these could be incorporated in guidelines provided to ACAP Parties for data reporting. All the matters discussed would be considered by further work of the intersessional group, and

additional Working Group members from a number of Parties, including Chile and Argentina, indicated their willingness to contribute to further intersessional work.

RECOMMENDATIONS TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. Endorses the guidelines provided on estimating seabird bycatch and reporting results and associated information to the ACAP Secretariat.
2. Endorses the further development of the seabird bycatch reporting framework as part of the national reporting mechanism so as to report on the indicators developed.
3. Endorses proposed intersessional work to trial the system and report back to the next SBWG and AC meetings, so that a firm recommendation can be provided to MOP6.

13. COORDINATION OF ACTIVITIES RELATING TO RFMOS

SBWG7 Doc 15 provided an update on the progress against the 2013-2016 framework for ACAP's engagement strategy with RFMOs and CCAMLR, subsequent to that reported in **SBWG6 Doc 11 Rev 1**. This report provided for discussion, a revised list of actions to implement the framework for the next triennium.

SBWG7 Doc 23 reports on how the outcomes of the ACAP 2013 RFMO intersessional group have been progressed through the November 2014 CCSBT Effectiveness of Seabird Mitigation Measures Technical Group and onwards. The CCSBT workshop recommended that reviews of seabird measure effectiveness should combine regular RFMO monitoring of seabird bycatch rates and total number of birds killed, with periodic more detailed joint tuna RFMO seabird impact assessment (**SBWG Inf 16**). Outcomes are being progressed in 2016 and onwards through the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Indian Ocean Tuna Commission (IOTC) and the Western and Central Pacific Fisheries Commission (WCPFC) seabird reviews, which are starting in 2016, and through the BirdLife South Africa element of the FAO-GEF Common Oceans Tuna Project (as noted below).

SBWG Inf 14 reported on how BirdLife South Africa is implementing the seabird bycatch component of the Common Oceans Tuna Project. The overall aims of this component are to enhance uptake of seabird bycatch mitigation measures by pelagic longline fleets in the Atlantic and Indian Oceans; to strengthen the capacity of national institutions to manage and conduct analyses of seabird bycatch data; and to facilitate joint tuna RFMO seabird impact assessment. This is being pursued through national awareness workshops, observer training workshops, a port-based outreach pilot in Cape Town, South Africa and the hosting of joint tuna RFMO seabird bycatch assessment workshops in 2016-2018 (regional and global).

SBWG7 Inf 15 provided a report on a meeting of the Tuna RFMO Expert Working Group held in January 2015, which aimed to identify minimum harmonised standards for longline bycatch data collected by tuna RFMOs. It was noted that the identification of minimum data standards remains a work in progress. The meeting report is available [here](#).

The Working Group noted the list of future potential activities in **SBWG7 Doc 15** and regrouped these actions into the following prioritised list of key areas for the engagement with RFMOs (see **ANNEX 5** for the list of proposed activities within these priority key areas):

1. Engage in RFMO reviews of seabird measures (including the upcoming reviews by ICCAT, IOTC, WCPFC, and the joint tuna seabird bycatch assessments).
2. Strengthen RFMO measures (including the promotion of the revised ACAP best practice guidance).
3. Strengthen RFMO bycatch data collection and reporting requirements, and the inclusion of appropriate seabird bycatch mitigation elements within RFMO compliance monitoring. Focus ACAP inputs through the development of specific ACAP products (for example, advice on seabird bycatch indicators, seabird elements of electronic monitoring).

The Working Group noted the importance for ACAP of ensuring that engagement with RFMOs is as effective as possible, and that a key mechanism for this is collaborating with other such organisations (e.g. Inter-American Convention for the Protection and Conservation of Sea Turtles) and with ACAP Parties. Such collaboration would need to be planned sufficiently in advance to allow for consistent communication and strategy setting.

The Working Group was pleased to hear that Dr. Kotaro Yokawa, the Chair of the ICCAT Sub-Committee on Ecosystems (By-catch assessment and mitigation measures) intended to participate in future Working Group meetings to strengthen the relationship between ACAP and ICCAT with regard to seabird bycatch mitigation issues. The Working Group looks forward to future opportunities to work with Dr. Yokawa and his Sub-committee.

RECOMMENDATION TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. Supports the implementation of the prioritised key areas for engagement with RFMOs, as identified in **ANNEX 5**, and provides the resources necessary to achieve this.

14. ELECTRONIC MONITORING

SBWG7 Doc 06 reported on intersessional work to investigate the benefits and limitations of electronic monitoring (EM). The document assessed the likely effectiveness of EM for monitoring a range of data parameters relevant to seabird bycatch, and proposed-best practice advice for consideration by the Working Group.

SBWG7 Inf 17 provided information on the electronic monitoring programme implemented in Commonwealth-managed fisheries in Australian jurisdiction, which has found EM to be a cost-effective verification tool that improves the accuracy and reliability of logbook data.

SBWG7 Inf 18 reported on a 2015 experiment in New Zealand by Southern Seabirds Solutions to assess video observation in an inshore bottom longline fishery, using seabird proxies. The experiment demonstrated that seabird proxies were reliably, but not perfectly,

observed in the footage. Six seabird interactions were also detected, of which three were identified to species, and three to group level.

SBWG7 Inf 19 reported on a National Marine Fisheries Service EM pilot in the Pacific Halibut longline fishery. Correct species identification varied between ca 10% and 76% based on frame rate and other attributes. To improve the accuracy of seabird identifications, vessel operators are required to hold incidentally caught seabirds up to the camera for 2 to 3 seconds. In 2016, further work will be conducted to monitor seabirds and to monitor compliance with seabird mitigation measures.

The Working Group discussed the recommendations proposed in **SBWG7 Doc 06** and, given that there are various designs of EM systems, it was proposed that the recommendations be revised as follows:

- i. The design of EM systems, and procedures governing the deployment of these systems, should ensure imagery is collected and stored in a manner that avoids external tampering and provides safe storage for subsequent review, and analysis of the imagery is undertaken by independent reviewers.
- ii. EM systems should collect fine scale data about the day, time, and location of deployment and retrieval of fishing gear.
- iii. EM systems should provide imagery of a clear view of the fishing gear as it is set and retrieved and all setting and hauling events should be recorded by the system.
- iv. Imagery gathered by EM systems should be independently reviewed so that the programme and all aspects being monitored can be considered transparent and robust.
- v. EM systems should provide imagery that results in a clear and unobstructed view of any mitigation measures required by regulatory bodies and footage should be independently reviewed to verify that the mitigation is being deployed in accordance with specifications.
- vi. Seabirds brought onboard the vessel alive should be handled in accordance with ACAP's 'Hook Removal from Seabirds' advice.
- vii. Protocols for the identification of seabirds to species level should be developed and applied, where practicable. Such protocols may include, but should not be limited to, retaining the carcass or a sample of the feather or muscle for post-trip analysis, and requiring the crew to hold the seabird in front of an electronic-monitoring system camera to facilitate species identification by review of the imagery. The protocol should incorporate guidelines and protocols outlined in ACAP's 'Seabird Bycatch Identification Guide' where relevant.
- viii. Ideally, development of EM systems includes a pre-implementation phase in which stakeholders work together to address challenges for implementation, as well as a process for providing feedback on implementation

In terms of next steps, the Working Group noted that further development of **SBWG7 Doc 06** would be useful, and could create a product useful to ACAP Parties and others (including RFMOs), in order to encourage EM initiatives to include seabird bycatch related objectives.

The Working Group agreed that, if **SBWG7 Doc 06** is developed further, it would be useful to include:

- citations of the studies on which the best practice advice is based,
- advice on how data might be stored when distant water fleets remain at sea for long periods, and on protocols for data transfer back to the flag state for auditing (for example via transshipment and ports),
- advice on the role of vessel operators and crew in equipment maintenance, and
- advice on contingency planning for when faults in EM systems occur.

The Working Group noted that analysis of imagery data can take a lot of time and needs to be considered during the scoping of any EM programme. It was noted that there was an instance in the USA (not described in **SBWG7 Inf 19**) where EM was able to identify a bycaught seabird as a Short-tailed Albatross, when the on-board observer was not in a position to make this identification.

Views were expressed on the value of EM as a tool to monitor compliance with use of seabird bycatch mitigation measures, in particular as there remains the potential risk of bird bycatch being concealed from cameras during hauling.

The Working Group noted that in the Australian EM system described in **SBWG7 Inf 17**, the EM is being used as an audit process to incentivise the accuracy of logbook data, differing from other cases in which EM may be used to complement data collected by onboard observers. Both provide data, but in different ways. Australia is using a combination of 10% random audit of fishing activity, 100% audit of logbook seabird bycatch events, and 100% auditing of vessels that are considered to be high risk.

Work underway in Chile is finding that EM is a useful tool for monitoring small-scale and artisanal fisheries, and is in discussions with NOAA to identify systems most suited for small scale fisheries. Pro Delphinus reported work underway in Peru to establish differences between data collected via cameras and onboard observers, and that further information would be useful on what systems are on the market, and their cost. Finally, it was also noted that under the GEF Common Oceans Program, there are seabird bycatch EM trials proposed on up to five vessels each in Brazil and South Africa.

RECOMMENDATIONS TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. Endorses the advice that the Working Group has developed for Electronic Monitoring in relation to seabird bycatch, outlined in i-viii above.
2. Encourages further development of ACAP advice on Electronic Monitoring.

15. RISK ASSESSMENT

SBWG7 Doc 17 presented data on the distribution of seabirds attending trawlers and their bycatch rates in waters adjacent to the Argentine hake fishery closed area in the Argentine Sea, as well as the foraging behaviour of satellite-tracked Black-browed Albatrosses and Southern Giant Petrels inside and outside the closed area. The closed area influenced the foraging behaviour of albatrosses and petrels, such that the time spent by adult birds foraging along the boundaries of the closed (where the fishing effort was concentrated) was greater than the time spent within this area. The paper recommends that such areas must be considered a priority for the implementation of conservation measures and that the development of specific regulations to mitigate the effects of such closures should be considered.

The Working Group supported the need to consider the possible consequences on bycatch rates of seabirds of closing fisheries areas due to edge effects and displacing fishing effort into adjacent areas where regulations regarding bycatch mitigation or compliance monitoring may not be stringent. The Working Group noted that the current ACAP best-practice advice for mitigating seabird bycatch in longline and trawl fisheries indicates that '*Time-Area closures are highly effective for target locations/seasons but may displace fishing effort into adjacent or other areas which may not be as well regulated, thus leading to increased incidental mortality elsewhere*'. The Working Group agreed that the relevant advice documents should be updated to include a reference to the study reported in **SBWG7 Doc 17**. The Working Group also recommended that it would be useful to obtain information on the extent to which movements of vessels out of well-regulated areas may be accompanied by changes in the use of mitigation measures, but acknowledged that this would be challenging to achieve. Finally, the Working Group encouraged Parties to consider these displacement effects when planning and designing time-area closures.

The UK provided a statement in relation to Figure 1 of **SBWG7 Doc 17 (ANNEX 6)**.

SBWG7 Doc 19 Rev 1 reported the results of the first analysis of data on seabird bycatch in trawl fleets in southern Chile. Data were collected between September 2012 and December 2014. Black-browed Albatrosses represented 92% of captured birds. The magnitude of seabird bycatch showed a clear correspondence with the areas of greatest catch and effort of the trawl fleet, between 45°S and 47°S and July to September. The work was performed on a small fraction of the fleet and did not specifically investigate collisions with warp and third wire cables, which could undoubtedly increase estimated catch rates. The results presented provide support for the addition of trawl fisheries in the Chilean National Plan of Action - Seabirds (PAN-AM, Chile).

The Working Group congratulated the authors of this important work, and supported plans for further research both to obtain better estimates of bycatch and to investigate the development of suitable mitigation measures. The proposal to include trawl fisheries in the Chilean National Plan of Action – Seabirds (PAN-AM, Chile) was supported by the Working Group. The Working Group also encouraged collaboration between Parties to share information and expertise on data collection protocols to quantify the negative impacts of trawl fishing on seabirds.

SBWG7 Doc 22 described ongoing research by Australia comparing the range of albatrosses from Macquarie Island with fishing effort data. The paper encouraged support by Parties in the provision of fisheries effort data, especially for higher latitudes off South

America. Already, a number of ACAP Parties and Regional Fisheries and Conservation Bodies are contributing to this research. The success of this research will also allow an extension of the analyses to a whole Southern Ocean assessment in collaboration with French and Chilean researchers. This collaboration will provide a foundation for future capacity building and increase opportunities for all data holders involved.

The Working Group agreed that the sort of collaboration envisaged in **SBWG7 Doc 22** represents a good model for ACAP in helping facilitate international co-operation in working towards the conservation of albatrosses and petrels. Access to fisheries effort has long been a challenge in conducting assessments of the impacts of fisheries on seabirds. The Working Group recommended that all Parties and Range States contribute relevant fisheries effort data for use in regional and global assessments, and actively collaborate in these processes.

SBWG7 Inf 20 described a framework of tools being developed to ensure the available knowledge on seabird biology and ecology is adequate to understand and manage at-sea threats to New Zealand seabirds. It can be used to identify and prioritise gaps in current knowledge limiting our understanding of at-sea threats, so future research can be focussed on these areas. Potential use of the prioritisation tools was illustrated using New Zealand breeding albatross taxa. Spatial mapping and demographic modelling tools have been made freely available online.

SBWG7 Inf 27 presented results of a study investigating risk factors for seabird bycatch in the Hawaii deep set tuna pelagic longline fishery, which annually catches hundreds of seabirds, primarily Laysan and Black-footed Albatrosses. Since the adoption of regulations in 2001, the seabird catch rate has declined by 74%. However, over the last decade, the catch levels have increased due to increasing trends in both fishing effort and nominal seabird catch rates. An increasing trend in the number of albatrosses attending vessels, possibly linked to declining regional ocean productivity, may also have contributed to the increasing seabird bycatch rates. Of the two bycatch reduction options to meet regulatory requirements, side-setting combined with line weighting performed better than blue-dyed bait in reducing seabird bycatch.

The Working Group noted that the results of the study on the Hawaii pelagic longline fishery confirmed current ACAP best practice advice that the combined use of side-setting and line weighting is more effective than blue-dyed bait in reducing seabird bycatch in the North Pacific. The Working Group were encouraged by the finding in the study that there has been good uptake of line weighting in this fishery as use of line weighting was used by vessels even in areas where it was not legally required to be used.

SBWG7 Inf 01 documented a high degree of overlap between fishing vessels of both artisanal and industrial purse-seine fisheries targeting sardines and anchovies and feeding areas of Pink-footed Shearwater during the breeding season in Chile. These areas of overlap are near Valdivia, and correspond to the main feeding areas of the species and also constitute the main fishing area within Chile. Seabird bycatch records from both the artisanal fisheries and industrial fisheries highlight that this is a priority issue that needs further investigation.

PaCSWG3 Inf 03 reported that although only 30% of Pink-footed Shearwaters tracked wintered off Peru, the population overall spent almost half the non-breeding period there when accounting for post- and pre-breeding stopovers together with cumulative time off

North America. Therefore, the ocean off Peru serves as a migratory bottleneck and is disproportionately important for the entire breeding population. Due to the disproportionate importance of Peruvian waters for Pink-footed Shearwaters, this should be a high priority region for assessment and mitigation of at-sea threats such as mortality from fisheries bycatch.

The Working Group congratulated the authors of the papers on Pink-footed Shearwaters, and encouraged continued work in this regard to help improve knowledge of the at-sea threats this recently listed ACAP species may be facing.

PaCSWG3 Doc 04 provided a breeding population status assessment for the Waved Albatross at the two principal colonies in Galápagos, Ecuador, namely Punta Cevallos and Punta Suárez, both on Española. In addition to the recommendations related to continued population monitoring on Española and that breeding population priority status be considered, **PaCSWG3 Doc 04** recommended evaluating existing fisheries observer activity in the eastern tropical Pacific where Waved Albatrosses are known to forage to determine whether it is sufficient for detecting the occurrence of bycatch. The paper also recommended engaging stakeholders to conduct a complete review of the Waved Albatross Plan of Action, including issues relating to the species' interaction with fisheries.

On the issue of seabird bycatch related threats, the Working Group noted that the American Bird Conservancy and Ecuadorian partners continue to document the incidence of bycatch of Waved Albatross and other seabirds in small vessel demersal hake fishery in Santa Rosa and nearby ports. The development and use of line setting bycatch mitigation measures (the NISURI method) and fisher community workshops used to increase uptake in five ports are being progressed through these partnerships.

SBWG7 Inf 13 reported the results of a trans-disciplinary research programme to describe and analyse information on the intentional capture of Waved Albatrosses in northern Peru by offshore small-scale fishers. On the basis of interviews conducted in 2008 it was estimated that between 16 and 24 Waved Albatrosses have been intentionally harvested by vessels from the port of Salaverry since 2006. Reasons for capturing albatrosses included insufficient food supplies onboard during long fishing trips, collection of rings from ringed birds, development of a taste for the flesh and even boredom. Fishers' perceptions showed a lack of awareness of the conservation status of albatrosses, highlighting the need for strengthening the role of existing local organizations involved with education and conservation.

The Working Group recognised the difficulty in obtaining estimates of incidental capture of seabirds, and in addressing this threat. The multi-disciplinary approach adopted in the study, and especially the incorporation of social science research, was highlighted as being particularly useful in this regard. The Working Group recommended the use of similar approaches to investigate the nature and extent of intentional capture of ACAP-listed species more broadly, and how best to address any issues that are identified from these investigations.

PaCSWG3 Inf 04 reported findings from an ACAP-funded project to evaluate different approaches to predicting overlap between the at-sea distributions of seabirds and fishing effort. The paper was considered in more depth during the Third Meeting of the Population and Conservation Status Working Group, and discussed the results in the context of pitfalls

associated with predicting seabird distributions and relative overlap with fisheries in the absence of tracking data for these highly dispersed species.

RECOMMENDATIONS TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. Encourages Parties and others to consider the possible edge effects when planning and designing fisheries closure areas.
2. Endorses the updating of relevant mitigation review documents to include the recent study on the impact of fisheries closures on seabird bycatch.
3. Encourages Parties to share information and expertise on data collection protocols to quantify the negative impacts of trawl fishing on seabirds.
4. Encourages Parties to contribute fisheries effort data to regional and global assessments of the impact of fisheries on seabirds and actively to collaborate in these processes.

16. FAO IPOA/NPOA-SEABIRDS

SBWG7 Doc 13 provided a review of the International Plan of Action for Reducing Incidental Catch of Seabirds in Capture Fisheries (IPOA-Seabirds) process, a voluntary instrument established in 1999, elaborated within the framework of the FAO Code of Conduct for Responsible Fisheries, and administered through the FAO's Committee on Fisheries (COFI). The IPOA-Seabirds stipulates that countries should carry out an assessment of their fisheries to determine if they have a seabird bycatch problem and, if so, develop and adopt a National Plan (NPOA-Seabirds) to manage the problem. The review found that very few of COFI's 136 Member States had conducted a seabird bycatch assessment of their fisheries, or have concluded that a National Plan was needed, despite evidence that many States had fisheries with seabird bycatch levels of concern. Only 14 documents that were either a NPOA-Seabirds or possessed the characteristics of a national plan have been produced to date. These had been prepared by 10 States, with a further four 'Plans' that were not comprehensive in their coverage of a State's fisheries. Eight of the 14 existing Plans had been prepared by Parties to ACAP. Scores of the level of conformity with the existing National Plans and Technical Guidelines produced by FAO in 2009 were generally high, and ranged from 4.0 to 9.5 on a 10-point scale. The mean score for all National Plans was 7.0.

Assessing the effectiveness of National Plans in reducing the incidental catch of seabirds in fisheries was hampered by paucity of data at an appropriate scale. The review found little evidence to indicate that development of National Plans had led to a reduction in the bycatch of seabirds in States that have adopted an NPOA-Seabirds, although there was evidence that this had occurred for three States. Some key points and questions that arose from the review were:

- half of the National Plans developed to date have been prepared by ACAP Parties;

- lack of will amongst many of the FAO COFI Member States to commit to the IPOA-Seabirds is a challenge to reducing seabird bycatch in capture fisheries; and
- whereas National Plans are being produced by States that conform well to the FAO Technical Guidelines, their effectiveness in reducing bycatch, has not been widely demonstrated.

UK congratulated the authors of **SBWG7 Doc 13** on an excellent effort to tackle a difficult subject to review. UK noted the difficulty in understanding the workings of the European Union (EU) and explained that the actions of the three Member States of the EU that are party to ACAP (Spain, France, UK) were governed by the EU's Common Fisheries Policy. The EU's Plan of Action thus was the equivalent the NPOA-Seabirds for these three countries (and other Member States of the EU). In relation to the UK's Overseas Territories, one had developed both a plan of action for longline and for trawl as described in **SBWG7 Doc 13**, two others relevant to ACAP had reviewed the need for an NPOA-Seabirds and had decided that a formal plan was not needed. UK was unsure if these reviews of the need for an NPOA had been included in the overall review. One of these territories had undertaken a number of extra actions coherent with the guidance related to NPOA-Seabirds. All three UK Overseas Territories now have very low or minimal seabird bycatches and were working where necessary to reduce bycatch levels still further (e.g. **SBWG7 Inf 25**). The UK noted that all of these actions in relation to NPOA-Seabirds were coherent with Paragraph 15 of the FAO requirements in relation to NPOAs "Each state is responsible for the design, implementation and monitoring of its NPOA-Seabirds".

Argentina noted that the questionnaire that FAO uses for monitoring the implementation of the IPOA Seabirds is very brief and succinct and it is difficult to reflect on it the complexity and extent of all the objectives and actions included in NPOAs. Some countries, such as Argentina, regularly assess progress in implementing their NPOAs. This includes reviewing those actions that may not have a direct impact on reducing interaction between fisheries and seabirds. The FAO monitoring system is thus not a perfect tool for tracking progress.

SBWG7 Inf 22 summarised New Zealand's implementation of its National Plan of Action. The implementation includes actions such as; development of some fishery specific targets, species specific action plans, targeted engagement in fisheries posing high risk to seabirds (including seabird related training and development of vessel specific seabird focused management plans). Recreational fishing is being targeted with interaction research and education. Research efforts continue into seabird abundance and demographics, mitigation techniques, bycatch estimations, and risk assessment.

SBWG7 Inf 23 summarised the mitigation measures established for Uruguayan fisheries in their recently revised NPOA-Seabirds. For pelagic longlines, these are the obligatory use of night setting in combination with at least one of the following two measures: bird-scaring lines or weight ≥ 60 g attached to branch lines within 1 m of the hook. Mitigation measures for the demersal longline fishery for Patagonian Toothfish are the Mammals and Birds Excluding Device (i.e. drop lines with nets) or minimum weight on the line (with a sink rate ≥ 0.3 m/s at 10m depth) in combination with bird-scaring lines or night setting. In the event that other demersal longline fisheries start operating in the near future they will be required to use minimum weight on the line in combination with bird-scaring lines or night setting. For the trawl fishery targeting Argentinean Hake, under a precautionary approach, the recommended mitigation measures to reduce seabird mortality from trawl cables are the use of bird-scaring lines and reduction of discards. Measures to reduce captures within the net

include cleaning the net before setting and reducing exposure time of the net at the sea surface.

SBWG7 Inf 24 presented a translated version of the Brazilian longline fisheries regulation (INI MMA/MPA 07/2014) that was adopted in 2014 to reduce seabird bycatch to a minimum level, as foreseen in the Brazilian NPOA-S. In accordance with ACAP best-practice recommendations, the measures are a combination of weighted branch lines, bird-scaring lines and night setting that should be applied simultaneously by authorized vessels fishing within Brazil's territorial waters, Exclusive Economic Zone (EEZ) and in international waters south of 20°S. It was highlighted that these measures were established with the full participation of all stakeholders involved including fishing industries, government and NGOs. The regulation foresees additional compliance measures such as increasing the frequency (to every 20 minutes) of transmission of VMS data and electronic monitoring. Also, the possibility of carrying out tests of sliding leads was included in order to improve fisher safety.

BirdLife International noted that targeted seabird conservation efforts by the Albatross Task Force have been carried out in Argentina since 2009. This work has included at-sea monitoring and experimental mitigation trials, on shore advocacy and technical support for the INIDEP observer programme. In 2010 the ATF reported that a high seabird mortality rate through cable collisions was associated with the fleet (**SBWG3 Doc 12**), and updated this information in 2011 indicating the efficacy of bird-scaring lines at reducing the mortality (**SBWG4 Doc 13**). In 2013 a fleet level mortality estimate was provided indicating 0.237 [CI = 0.140-0.344] Black-browed Albatrosses per hour were killed in the fishery, but that the introduction of bird-scaring lines significantly reduced this mortality (**SBWG5 Doc 36**). This information was included in the updated NPOA-S and also reported to the SBWG (**SBWG5 Doc 26**). In 2014 the Argentinean Federal Fishery Council requested a pilot study be conducted to assess the practical implementation of bird-scaring lines in the fishery, and in late 2014 and early 2015 a six month pilot study was completed through collaboration between the ATF and INIDEP. Today, seven years since the initial seabird bycatch problem was reported for the fishery there are still no regulations that require seabird bycatch mitigation measures. BirdLife International noted that South Africa introduced regulations in 2006 leading to a 99% reduction in albatross mortality through the use of bird-scaring lines (**SBWG6 Inf 13**). BirdLife International encouraged the implementation of regulations in this fishery.

In response, Argentina clarified that, at the end of 2015, the Federal Fisheries Council in Argentina had received the final report of the trials regarding the use of bird-scaring lines aboard its freezer trawl fleet. As a consequence, proposed measures are now being revised. It is expected that by the second half of 2016 the mitigation measure proposed, or similar, will be in place. In the meantime, the NPOA working group will consider other possible mitigation measures for this and other fleets.

The Working Group agreed that there were many positive lessons that could be learned from the writing and implementation of NPOAs, but equally it was obvious that NPOAs had only been effective in driving action in a limited number of States. The small group working on the analysis of NPOAs was thanked and encouraged to continue its work.

Some suggestions were made to specify further some parts of the work programme relating to NPOAs to be considered by the Advisory Committee.

The Working Group discussed how best to gather information from Parties on progress towards delivering their NPOAs.

RECOMMENDATIONS TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. Encourages ACAP Parties that do not have a National Plan – Seabirds to prepare and adopt a plan that fully complies with FAO's Technical Guidelines.
2. Encourages Parties with an existing NPOA-S to review and strengthen them, as applicable, to ensure full compliance with the Technical Guidelines.
3. Encourages Parties to report to the SBWG case studies demonstrating success and highlighting challenging areas, where additional work is required and where collaboration or advice would be welcome.
4. Conducts a comprehensive analysis of the implementation of each plan within the intersessional period to assess their effectiveness in reducing bycatch of albatrosses and petrels.

17. LISTING OF SPECIES ON ANNEX 1

SBWG7 Doc 25 reported on an intersessional review of scores for at-sea threats and migratory nature of albatross and petrel species that might be considered for listing in Annex 1 of ACAP. Several changes had been recommended based on revised scientific findings. The authors noted the need for clarification regarding the categorization of at-sea threats as well as the overlap between some of the categories that remain.

The Working Group agreed that these issues should be brought to the attention of AC9, and that the work on the criteria should continue intersessionally in coordination with the PaCSWG. It was also noted that for the migratory nature criterion review, Handbook of the Birds of the World maps were used in preference to those produced by Birdlife International due to the former being more easily accessible, but that both sources of information should be similar. BirdLife International advised that their distribution maps will be updated within the next nine months as part of the review of the IUCN Red List of Threatened Species.

RECOMMENDATION TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. Endorses further intersessional work on the listing criteria.

18. ACAP FUNDED PROGRAMMES

AC9 Doc 14 outlined the processes followed for the allocation of funds within the Small Grants Scheme and the Secondment Programme, highlighting lessons learnt and proposing ways to refine implementations in future calls. **AC9 Inf 02** provided a summary of outcomes and progress achieved with conservation projects funded through the Advisory Committee's Small Grants Scheme in the 2013 funding round (as well as outstanding reports from 2010 – 2012), and Secondment Programme from the 2015 round.

The Working Group noted the good progress made with projects funded through the ACAP Small Grants Scheme in 2013 and the Secondment Programme in 2015, and highlighted the importance of these mechanisms in advancing the objective of the Agreement and the Work Programme of the Advisory Committee.

19. TOOLS AND GUIDELINES

There were two Working Group documents considered under this agenda item:

SBWG7 Doc 21 explained the benefits of, and sets out procedures that might be included in, an ACAP best practice guide for removing entangled seabirds from nets. The likelihood that seabirds will be found alive during net hauling varies considerably across fishing gear types, and between commercial, artisanal and small-scale fisheries, and in recreational and Indigenous fisheries. Such procedures would complement information in ACAP's de-hooking guide, and were drawn, in part, from an existing industry code of practice for the South Coast Purse Seine Managed Fishery in Western Australia (**SBWG7 Inf 11**). **SBWG7 Doc 21** recommended that consideration be given to developing a best practice-guide on removing entangled seabirds from nets, and that core funding be allocated for this purpose.

The Working Group supported the proposal to develop a best-practice guide for removing entangled seabirds from nets. It was noted that the development of such material could be achieved through a secondment. The Working Group discussed the usefulness of audio-visual materials and it was noted that videos on living birds captured on the net are not commonly available. Sharing existing protocols and related information was encouraged in order to improve a best practice guide on removing entangled seabirds from nets.

SBWG7 Doc 24 reported on the development and transfer to on-board observers via hands-on wet labs in Argentina, Brazil, Chile, and Peru, of comprehensive, yet simplified, sample collection protocols from by-caught birds for assessment of health condition, pollution loads, disease exposure, as well as demographics, genetics, diet, etc. Ground-testing of these protocols and methods will be conducted in 2016, and improved versions presented to ACAP for broad distribution.

The Working Group emphasized the importance of having simple protocols to obtain useful information from bycaught birds. Members of the involved countries also emphasized that the workshops were very useful to discuss how samples can be taken to the laboratories. The process was also useful to obtain disembark permission of bycaught seabirds with national authorities in Argentina, and to engage government authorities, the university and NGOs, and established the basis for collecting bycaught birds in Chile.

RECOMMENDATIONS TO THE ADVISORY COMMITTEE

It is recommended that the Advisory Committee:

1. Endorses the development of a best-practice guide on removing entangled seabirds from nets, and provides core funding to support its development.
2. Encourages ACAP countries to define implementation and sustainability mechanisms (i.e. time assignments, permission to store samples on board and disembark at ports) that would enable on-board observers to complete the sample collection protocols from bycaught birds outlined in **SBWG7 Doc 24**.
3. Acknowledges current limited seabird health research capacity in South America and encourages the establishment of a regional “health network” to better deliver on ACAP priorities for proper curation of tissue samples from bycaught seabirds.
4. Recognizes the value of field-testing the developed protocols and endorses pilot implementation in selected countries where necessary permits have been secured.

20. REVIEWS AND INFORMATION

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 manuscript summarises much of the work of the Agreement, particularly that of the Working Groups and was submitted to the journal *Biological Conservation* in October 2015. The reviewers’ comments were generally favourable, and a revised version was resubmitted at the end of March 2016.

An abstract on progress and priorities in the conservation and management of ACAP species was submitted to the 6th International Albatross and Petrel Conference, to be held in Barcelona in September 2016. This will outline the aims of ACAP, current global population trends and major data gaps for the listed species, mitigation success stories, and review the framework for identifying and prioritising the main fisheries and breeding sites for conservation action.

21. SBWG WORK PROGRAMME

The Seabird Bycatch component of the 2016-2018 Advisory Committee Work Programme approved by MoP5 (**AC9 Doc 12**) was reviewed following discussions at SBWG7. A small breakout group considered the following actions to be of highest priority within this section of the Work Programme: 3.1, 3.5, 3.6, 3.9, 3.10, 3.13, 3.18, 3.19, 3.20, 3.21, 5.15, 5.16.

22. ANY OTHER BUSINESS

Australia requested that Parties and Range States share information on the nature and extent of seabird entanglements and mortalities associated with bird-scaring lines, including information that would help interpret the reasons for such entanglements.

23. ADOPTION OF THE REPORT

This report was prepared for consideration by the Advisory Committee.

24. 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 Chile 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 Maria Laura Speziali 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 SBWG7 MEETING PARTICIPANTS

SBWG Members	
Anton Wolfaardt	SBWG Convenor, United Kingdom
Igor Debski	Department of Conservation, New Zealand (Vice-convenor)
Tatiana Neves	Projeto Albatroz, Brazil (Vice-convenor)
Joanna Alfaro-Shigueto	Pro-Delphinus, Peru
Jorge Azócar	Instituto de Fomento Pesquero, Chile
Barry Baker	Institute of Marine and Antarctic Studies, Australia
Jonathon Barrington	Australian Antarctic Division, Department of the Environment, Australia
Nigel Brothers	Humane Society International
Sebastián Jiménez	Dirección Nacional de Recursos Acuáticos, Uruguay
Jeffrey Mangel	Pro-Delphinus, Peru
Ken Morgan	Environment and Climate Change Canada, Canada
Gabriela Navarro	Subsecretaría de Pesca y Acuicultura, Argentina
Juan Pablo Seco Pon	Instituto de Investigaciones Marinas y Costeras, CONICET-UNMDP, Argentina
Cleo Small	BirdLife International
Mark Tasker	Joint Nature Conservation Committee, United Kingdom
Barbara Wienecke	Australian Antarctic Division, Department of the Environment, Australia
Advisory Committee Representatives and Advisors	
Luis Cabezas Bravo	Advisor, Chile
Eduardo Espinoza	Representative, Ecuador
Patricia Hurtado	Representative, Argentina
Amanda Kuepfer	Advisor, United Kingdom
Guillermo Luna-Jorquera	Advisor, Chile
Richard Phillips	Advisor, United Kingdom/ PaCSWG Co-convenor
Joost Pompert	Advisor, United Kingdom
Sally Poncet	Advisor, United Kingdom
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Rodrigo Claudino	Projeto Albatroz, Brazil

Sarah Ellgen	NOAA Fisheries, USA
Beth Flint	U.S. Fish and Wildlife Service, USA
Esteban Frere	BirdLife International
Edison Garces	Instituto de Fomento Pesquero, Chile
Héctor Gutiérrez	Oikonos Ecosystem Knowledge
Erin Hagen	Island Conservation
Kathryn Huyvaert	Colorado State University, USA
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Hannahrose Nevins	American Bird Conservancy
Oliver Yates	BirdLife International

ACAP Secretariat

Marco Favero	Executive Secretary
Wiesława Misiak	Science Officer
John Cooper	Information Officer
Gabriela Blanco	Meeting Staff


Interpreters

Sandra Hale	OnCall Latam
Maria Laura Speziali	OnCall Latam

Non-attending SBWG members

Paul Brickle	University of Aberdeen, United Kingdom
Johannes de Goede	Department of Agriculture, Forestry and Fisheries, South Africa
Andrés Domingo	Dirección Nacional de Recursos Acuáticos, Uruguay
Eric Gilman	Hawaii Pacific University, USA
Elisa Goya	Instituto del Mar del Peru (IMARPE), Peru
Svein Løkkeborg	Institute of Marine Research, Norway
Alexandre Marques	Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis
Ed Melvin	University of Washington, USA
Graham Robertson	Australia
Roberto Sarralde	Instituto Español de Oceanografía, Spain
Ben Sullivan	BirdLife International

ANNEX 2. REVISED SUMMARY ADVICE FOR REDUCING THE IMPACTS OF PELAGIC AND DEMERSAL TRAWL GEAR ON SEABIRDS

 <p>Agreement on the Conservation of Albatrosses and Petrels</p>	<h3>ACAP SUMMARY ADVICE FOR REDUCING IMPACT OF PELAGIC AND DEMERSAL TRAWL GEAR ON SEABIRDS</h3> <p><i>Reviewed at the Ninth Meeting of the Advisory Committee La Serena, Chile, 9 – 13 May 2016</i></p>
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The causes of mortality in trawl fisheries depend upon the nature of the fishery (pelagic or demersal), the species targeted and fishing area. Mortalities may be categorised into two broad types: (1) cable-related mortality, including collisions with net-monitoring cables¹, warp cables² and paravanes; and (2) net-related mortality, which includes deaths caused by net entanglements. Seabird interactions have been demonstrated to be significantly reduced by the use of mitigation measures that include protecting the warp and other cables, managing offal discharge and discards, and reducing the time the net is exposed on the surface of the water. The following measures have been demonstrated to be effective at reducing seabird bycatch in trawl fisheries and are recommended:

Offal and discards

In all cases, the presence of offal and discards is the most important factor attracting seabirds to the stern of trawl vessels, where they are at risk of cable and net interactions. Managing offal discharge and discards while fishing gear is deployed has been shown to reduce seabird attendance. The following management measures are recommended:

1. Avoid any discharge during shooting and hauling.
2. Where practicable, convert offal into fish meal and retain all waste material with any discharge restricted to liquid discharge / sump water to reduce the number of birds attracted to a minimum; and

¹ The netsonde monitor cable connects the echosounder or netsounder on the headline of the trawl net to the vessel.

² The warp cables or trawl warps are the cables used to tow nets.

3. Where meal production from offal and full retention are impracticable, batching waste (preferably for two hours or longer) has been shown to reduce seabird attendance at the stern of the vessel. Mincing of waste has also been shown to reduce the attendance of large albatross species.

Cable strike

Warp cables

1. Deploy bird scaring lines while fishing to deter birds away from warp cables.

Net monitoring cables

Net monitoring cables should not be used. Where this is impracticable:

1. Deploy bird scaring lines specifically positioned to deter birds away from net monitoring cables while fishing; and
2. Install a snatch block at the stern of a vessel to draw the net monitoring cable close to the water to reduce its aerial extent.

Net entanglement

1. Clean nets after every shot to remove entangled fish (“stickers”) and benthic material to discourage bird attendance during gear shooting;
2. Minimise the time the net is on the water surface during hauling through proper maintenance of winches and good deck practices; and
3. For pelagic trawl gear, apply net binding to large meshes in the wings (120–800 mm), together with a minimum of 400-kg weight incorporated into the net belly prior to setting.

Further measures include avoiding peak areas and periods of seabird foraging activity. It is important to note that there is no single solution to reduce or avoid incidental mortality of seabirds in trawl fisheries, and that the most effective approach is to use the measures listed above in combination. Net entanglements during the haul remain the most difficult interactions to mitigate.

CONTEXT

The FAO Best Practice Guidelines for IPOA/NPOA-Seabirds were recently amended to include trawl fisheries in addition to longline fisheries (FAO 2009), demonstrating increased serious concern and awareness of seabird mortality on global trawl fisheries.

ACAP has comprehensively reviewed the scientific literature dealing with seabird bycatch mitigation in trawl fisheries and this document is a distillation of the review.

ANNEX 3. RECOMMENDED ADDITIONS TO OBSERVER PROTOCOLS FOR MORE ACCURATELY DOCUMENTING THE DETAILS OF LIVE BIRD INTERACTIONS

1. For every separate bird bycatch event observers should differentiate whether the bird was caught during hauling, setting or uncertain.
2. For every separate bird bycatch event the observers should record if the bird is dead or alive, and if alive the condition of the bird (e.g. if it is weak and soaked to the skin).
3. For every separate bird bycatch event the observer should document the length of that particular branch line, and the weighting characteristics (amount and distance from the hook)
4. Add to observing data collection fields covering vessel characteristics
 - a) Distance between mainline haul roller and stern of vessel.
 - b) Distance between mechanised branch line retrieval device(s) and the stern of vessel.
 - c) Number of mechanised branch line retrieval devices.
5. Hauling and setting captures along with life status should be reliably reported in relevant international meetings (note: these data should be reported in a way that bird captures (set or haul) can be related to the mitigation measures in use, including the practice of night setting).

ANNEX 4. RECOMMENDED TEXT ON HOOK-SHIELDING DEVICES TO BE INCORPORATED INTO THE ACAP REVIEW AND BEST PRACTICE SUMMARY ADVICE FOR PELAGIC LONGLINE FISHERIES

Hook-shielding devices

Hook-shielding devices encase the point and barb of baited hooks to prevent seabird attacks during line setting until a prescribed depth is reached (a minimum of 10 m), or until after a minimum period of immersion has occurred (a minimum of 10 minutes) that ensures that baited hooks are released beyond the foraging depth of most seabirds. The following performance requirements are used by ACAP to assess the efficacy of hook-shielding devices in reducing seabird bycatch:

- (a) the device shields the hook until a prescribed depth of 10 m or immersion time of 10 minutes is reached
- (b) the device meets current recommended minimum standards for branch line weighting
- (c) experimental research has been undertaken to allow assessment of the effectiveness, efficiency and practicality of the technology against the ACAP best-practice seabird bycatch mitigation criteria developed for assessing and recommending best practice advice on seabird bycatch mitigation measures.

Devices assessed as having met the performance requirements listed above will be considered best practice. At this time, the following devices meet these performance requirements and represent best practice:

1. 'Hook Pod' – 68 g minimum weight that is positioned at the hook, encapsulating the barb and point of the hook during setting, and remains attached until it reaches 10 m in depth, when the hook is released.
2. 'Smart Tuna Hook' – 40 g minimum weight that is positioned at the hook, encapsulating the barb and point of the hook during setting, and remains attached for a minimum period of 10 minutes after setting, when the hook is released.

The assessment of these devices as best practice is conditional on continuing to meet the above performance requirements.

ANNEX 5. PROPOSED ACTIVITIES FOR ENGAGING WITH RFMOS

1. Engage in RFMO reviews of seabird measures (including the upcoming reviews by ICCAT, IOTC, WCPFC, and the joint tuna seabird bycatch assessments)
 - a. IOTC - Actively participate in and help facilitate the review of Resolution 12/06, which will formally take place at the Twelfth meeting of the Working Party on Ecosystems and Bycatch (WPEB12), in September 2016.
 - b. ICCAT - actively participate in and help facilitate the review of Recommendation 11-09, which will formally take place at the 2016 intersessional meeting of the Sub-committee on Ecosystems (SC-ECO) in September 2016. ACAP should also help facilitate the provision of the necessary data to this process by working with ACAP Parties that are members of ICCAT and others in advance of the SC-ECO meeting to prepare for the review. ACAP is also working to help support BirdLife International update the analysis of seabird distribution/tracking data within the ICCAT area and overlap with ICCAT fishing effort, which will serve as an important contribution to the review of Rec 11-09.
 - c. WCPFC – Actively participate in the WCPFC Technical and Compliance Committee (TCC) seabird compliance review in 2016. Encourage the WCPFC SC to develop a methodology to review the effectiveness of CMM 2012-07, taking into account the similar initiatives already underway in ICCAT and IOTC.
 - d. Joint tuna RFMO review – Support the development of a seabird risk assessment being developed by New Zealand.
 - e. It is recommended that ACAP supports and helps facilitate the seabird component of the FAO Common Oceans Tuna project. This should be done through the development and provision of relevant ACAP advice and guidelines, and by helping facilitate the active engagement of ACAP Parties in the Common Oceans Tuna project. It is also important to help facilitate efficient linkages between the Common Oceans Tuna project and work planned by individual RFMOs to review the efficacy of seabird conservation measures.

2. Strengthen RFMO measures (including the promotion of the revised ACAP best practice guidance)
 - a. WCPFC – Seek amendment of CMM 2012-07 so that the north Pacific fishery follows the two out of three approach or alternative measures within the revised ACAP best practice advice for pelagic longline fisheries. Engage in the process to review the design and performance specifications of the bird-scaring lines on vessels <24m, which must be reviewed within three years of the date of implementation of CMM2015-03
 - b. WCPFC - Continue to advocate for the southern boundary of CMM 2015-03 to be moved from 30S to 25S. Liaise with relevant Commission Members to seek inclusion of their EEZs within the scope of the revised CMM.

- c. All RFMOs - Following SBWG7, ACAP should present its updated best-practice advice on mitigation measures, as well as the outcome of work and discussions on bycatch indicators and methodological guidelines for estimating bycatch.
 - d. CCSBT - Continue to advocate for the adoption of a binding seabird CMM by the CCSBT.
 - e. IATTC - Further work with ACAP Parties and the US for the submission of a new proposal for the next Commission meeting in June 2016.
 - f. CCAMLR - Attendance at the CCAMLR Scientific Committee and Commission meetings is recommended to monitor the application of its seabird conservation measure and to strengthen it where necessary.
3. Strengthen RFMO bycatch data collection and reporting requirements, and the inclusion of appropriate seabird bycatch mitigation elements within RFMO compliance monitoring. Focus ACAP inputs through the development of specific ACAP products (for example advice on seabird bycatch indicators, and seabird elements of electronic monitoring)

**ANNEX 6. STATEMENT BY THE UK IN RELATION TO FIGURE 1 OF SBWG7
DOC 17**

“The UK objects to Figure 1 in **SBWG7 Doc 17 Rev 1**, which shows the Falkland Islands and surrounding maritime areas as being within the Argentine Economic Exclusive Zone (sic). The United Kingdom has no doubt about its sovereignty over the Falkland Islands and surrounding maritime areas.”