

Commission for the Conservation of
Southern Bluefin Tuna



みなみまぐろ保存委員会

**Report of
The Thirteenth Meeting of the Ecologically
Related Species Working Group**

**28 - 31 May 2019
Canberra, Australia**

Thirteenth Meeting of the Ecologically Related Species Working Group

28 – 31 May 2019

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Agenda Item 1. Opening

1. The independent Chair of the Ecologically Related Species Working Group (ERSWG), Mr Alexander Morison, welcomed participants and opened the meeting.
2. Each delegation introduced its participants. The list of participants is shown at **Attachment 1**.
3. The Chair summarised developments relating to the ERSWG since the ERSWG meeting in 2017. These comprised:
 - Agreement of elements of a CCSBT vision on Ecologically Related Species (ERS), including that ERS would be a standing item on the Annual Meeting agenda and the Secretariat would provide annual reports on Members' performance with respect to ERS; the ERSWG will be convened on an ad hoc basis to address specific issues identified by the Extended Commission (EC); and the Secretariat should forward the ERSWG report to the Extended Scientific Committee (ESC) and Compliance Committee (CC) for their information;
 - That the CCSBT has a new binding Resolution on ERS measures (the "Resolution to Align CCSBT's Ecologically Related Species measures with those of the other tuna RFMOs"), which requires CCSBT Members to comply with relevant ERS measures of ICCAT¹, IOTC² and WCPFC³ regardless of whether they are Members of those RFMOs; and
 - Minor administrative changes to the ERSWG's terms of reference.

1.1. Adoption of the Agenda

4. A modified agenda was adopted. The agreed agenda is provided at **Attachment 2**.
5. It was agreed that two matters would be discussed in the "Other business" agenda item, these being:
 - The proposed Joint Tuna RFMO Bycatch Working Group Meeting scheduled for 16-18 December 2019; and
 - CCSBT's involvement in the Common Oceans ABNJ tuna project.

¹ International Commission for the Conservation of Atlantic Tunas.

² Indian Ocean Tuna Commission.

³ Western and Central Pacific Fisheries Commission.

1.2. Adoption of Document List

6. The list of documents presented to the meeting is at **Attachment 3**. The Chair noted that some documents were submitted after the due date for the meeting. The ERSWG agreed to accept these late documents.
7. The Chair thanked participants for developing and submitting documents to the meeting. In particular, the Chair expressed appreciation to ACAP⁴, BirdLife International (BirdLife) and FAO⁵ for providing documents requested by the Secretariat.
8. The Chair noted that Australia, New Zealand, Taiwan and the Secretariat have nominated some of their meeting documents for uploading to the Bycatch Mitigation Information System (BMIS), and asked other participants to provide the Secretariat with details of any documents that they wished to have uploaded to BMIS together with the necessary document metadata.

1.3. Appointment of Rapporteurs

9. Australia and New Zealand volunteered to rapporteur agenda items 5 and 6. The Secretariat agreed to rapporteur the remainder of the meeting.

Agenda Item 2. Annual reports

2.1. Members

10. Annual reports from all Members were tabled and Members responded to questions of clarification that were raised by other Members and observers. The European Union had advised that it did not submit its Annual Report to the ERSWG since it recorded no recent SBT fishing activity.
11. General items arising during the discussion included:
 - BirdLife commented that there was a large discrepancy between its recent study using AIS data (provided by Global Fishing Watch), which indicated that less than 15% of Taiwanese vessels appeared to be complying with CCSBT's night setting requirements (allowing a 2h buffer on either side of sunrise/sunset), and Taiwan's report that night setting occurred between 95-99% of the time; in addition that Taiwan's seabird bycatch rates were low compared to other Members.
 - Taiwan agreed that some of its vessels may be conducting only partial night setting because of the long operation hours, even though the fishers are willing to comply night setting. However, Taiwan currently is unable to provide the proportion of partial night setting, and thus could not explain the discrepancy with BirdLife's study results. Taiwan undertook to provide an update if any further information became available.
 - The meeting noted Korea's paper (CCSBT-ERS/1905/Info10) which describes distributions and BPUE of seabirds bycaught by Korean tuna longline fisheries from 2012 to 2017, including a preliminary result on the effectiveness of

⁴ Agreement on the Conservation of Albatrosses and Petrels.

⁵ Food and Agriculture Organization of the United Nations.

weighted branch lines on seabird bycatch mitigation in Korean tuna longline vessels that was conducted in collaboration with BirdLife South Africa between 2013 to 2016.

- In response to questions about why its grey-headed albatross bycatch was high in 2016 but declined steeply in 2017, Korea referred Members to its paper CCSBT-ERS/1905/Info10 noting that this paper includes information on sea trials and a change in fishing grounds in 2016 and 2017.
 - In response to a question about why there seemed to be an increase in the live release of sharks between 2016 - 2017, Korea advised that recently Korean government encourages fishermen not to retain sharks on board.
 - Australia advised that if the limit of 0.05 seabirds per hook was exceeded there is a follow-up investigation into the potential causes of the breach. There are also potential compliance implications for vessels found not to be complying with mitigation methods including fines and other measures such as day setting bans.
12. Japan explained that, as a result of an initial investigation, it found that some of its data were being modified in the past observer reports on Japanese large-scale longline vessels fishing for SBT. Japan reported that such data from 18 trips in 2016, 2017 and 2018 were eliminated from the resubmitted data for the ERSWG data exchange (EDE) and the relevant report of Japanese scientific observer activities was revised accordingly. This issue does not affect data used for the southern hemisphere risk assessment.
 13. Japan advised that CCSBT and other tuna RFMOs have been informed. Furthermore, Japan is making an effort to prevent recurrence of problems with observer data through the strengthening of data cross-checking and debriefing for observers.
 14. Japan presented paper CCSBT-ERS/1905/19 and CCSBT-ERS/1905/20. These documents summarise the results of Japanese scientific observer program activities for SBT in 2016 and 2017, respectively, in terms of coverage, length frequencies of SBT, and data and biological samples collected by species. These documents used Japan's revised observer dataset that excluded some cruises which were considered to contain less reliable data as mentioned in paragraph 12.
 15. Japan advised that the implementation of night setting and line weighting had been observed more accurately since 2015.
 16. Japan's transparency was acknowledged by the Chair and Members.
 17. BirdLife thanked Japan for providing more detailed information which included that no bycatch mitigation methods had been used by some vessels and only one mitigation method used by others, and asked what Japan is doing to improve future compliance. Japan elaborated a number of points, including that it had distributed weighted lines to some vessels that had not previously used them, and now had introduced additional training to observers including ensuring that data are entered correctly, and that debriefing occurs. Japan noted a difficulty in monitoring on compliance of mitigation measures especially where only a small proportion of the fleet is observed and where a small number of vessels with poor performance may be a main contributor of the problem.

18. New Zealand reported that it is currently looking into using Electronic Monitoring (EM) as a means of monitoring compliance with mitigation measures and that compliance outcomes concerning alleged non-compliance in 2018 by New Zealand vessels were still pending. New Zealand also noted that some Members had not provided total estimates of ERS mortality as provided for by the template. This was discussed further under agenda item 2.2.
19. Two Members, Indonesia and South Africa, submitted annual reports but were not present at the meeting. There were no follow-up questions for these Members, but the meeting expressed its thanks for their reports and encouraged them to continue improving their observer coverage/programs.

2.2. Secretariat report on the ERSWG Data Exchange

20. The Secretariat presented paper CCSBT-ERS/1905/04, which contained summaries of data from the 2018 ERSWG data exchange (EDE). The paper was an update of CCSBT-ERS/1703/05 with some additional tables and a new attachment. The data were provided by Australia, Indonesia, Japan, Korea, New Zealand, South Africa, and Taiwan. While most Members provided data at the species level, one Member provided it at the highest taxonomic level allowed by the EDE template, and the lowest common denominator taxonomy was then adopted for the summaries. The main observations include:
 - Longline observer coverage for all areas combined was 9.4% in 2017, nearly 50% less than the coverage in 2016;
 - Overall bird capture rates show an almost linear increase from 2012 to 2016, with a sharp decrease in 2017;
 - 83% of all observed bird mortalities occurred in areas 7, 8, and 9; and
 - The number of unidentified bird species has decreased markedly to almost zero in 2016 and 2017, but the number of unidentified albatrosses reported has increased since 2011.
21. ACAP advised that its Identification Guide has been revised and will soon be available in many languages, which may help reduce the number of unidentified albatrosses reported.
22. It was noted that any standards and guidelines on EM have not yet been adopted in CCSBT and there is difference in data collection capacity between EM and observer onboard.
23. It was agreed that observer coverage in EM should be separated from the coverage by observer onboard in future summary from EDE.
24. It was noted that the estimate of total seabird bycatch in paper CCSBT-ERS/1905/04 was 11,300 seabirds, which is lower than reported in New Zealand's risk assessment and the Common Oceans Global Seabird Bycatch Assessment Workshop, which are around 36,000 to 41,000 seabirds. It was pointed out that global assessment incorporated the information from South American countries, other tuna fishing efforts that are not targeting SBT, and other unreported components and uncertainties, and should not be compared with a simple raising of reported BPUE shown in paper CCSBT-ERS/1905/04. It was noted that the scaled up total mortality estimates in paper 04 were only for

examination of EDE data and did not have the same level of accuracy as the other estimates.

25. The data for 2017 provided to the ERSWG shows a lower total numbers of reported seabird mortalities but the ERSWG noted that this was most likely to have resulted from inadequate and unrepresentative sampling and not from improved mitigation. Therefore 2017 data should be treated with caution. 2018 data may require the same caution to be applied.
26. The meeting discussed possible changes to the EDE template, including:
 - Increasing the spatial and temporal resolution of the data from CCSBT Statistical Area and year to 5-degree resolution and quarter;
 - Removing the calculated fields of capture rate, mortality rate and estimated total number of mortalities as the Secretariat can perform these calculations; and
 - Remove the “Captures (number)” field as this can be calculated from the “Fate (numbers) fields.
27. Discussions included the possibility of including the mitigation measures used in stratification, but some Members believed that this would complicate the process and introduce confusion due to the difficulties in collecting catch data disaggregated by mitigation measure utilised.
28. The Secretariat noted the differences in the reporting of mortalities between Members using the old EDE template, with some Members not including retained catch in earlier data and not including it in mortality rate calculations. The meeting agreed that reported mortalities and mortality rates should include retained catch, including commercial catch, and that this should be made clear so as to avoid the possibility of the double counting of mortalities. It was further agreed that those Members who have excluded retained catch in past reporting should provide revised historical data to the Secretariat.
29. The agreed changes to the EDE template that the meeting recommended are provided at **Attachment 4**. The meeting agreed that data would be submitted according to the revised template for 2019 data and onwards, and Members are encouraged to provide revised historical data based on this template.
30. The meeting considered the method that the Secretariat should use to produce raised mortality estimates from observed mortalities. It was agreed that raised mortalities would be estimated by applying a simple scaling ratio of observed mortalities and observed effort at the Statistical Area by fleet and year strata to the total effort. For finer scale estimates (e.g. 5 x 5 degree cell by quarter), the ratio calculated for the Statistical Area by fleet and year strata would be applied at the finer scale.
31. The meeting also agreed changes to Table 1 of the Template for the Annual Report to the ERSWG that reflects the changes made to the EDE template⁶. The revised version of Table 1 is provided at **Attachment 5**. It was further agreed that for ERSWG14, the Secretariat would trial the use of EDE data to produce Table

⁶ However, the increased spatial and temporal resolution of the EDE template has not been reflected in the annual report template.

1 for each Member. This may reduce the need for Members to produce this table for meetings after ERSWG14.

Agenda Item 3. Reports of meetings and/or outcomes of other organisations relevant to the ERS Working Group

32. The Executive Secretary of ACAP reported on the recent meetings of ACAP's Advisory Committee and its working groups (held in Florianopolis, Brazil, in the first two weeks of May 2019), for which the report will be available very soon. The meetings had identified an urgent and continuing conservation crisis for albatrosses and petrels. Thousands of albatrosses and petrels are dying every year as a result of fisheries operations. ACAP saw the need for an ongoing and enhanced effort to counter this crisis. Despite the efforts that had been put into researching and recommending effective mitigation measures to address seabird bycatch in fisheries, in many instances these were not being implemented or not being fully implemented. This included lack of compliance with measures adopted by RFMOs. The ACAP meetings had discussed ways of addressing the crisis and agreed to seek views from CCSBT and others on how to enhance its engagement to work constructively together to address these problems. In addition, ACAP decided on some enhanced strategies to get its message across more broadly, through a revised communication strategy, engagement with certification schemes, and ongoing refinement and dissemination of ACAP's best practice guidelines and advice.
33. TRAFFIC provided CCSBT-ERS/1905/Info11 (Rapid Assessment Tool Kit for Sharks and Rays) and CCSBT-ERS/1905/Info15 (IUCN⁷/TRAFFIC analyses of proposals to CITES⁸ CoP⁹18). TRAFFIC noted its priorities around CITES which included implementation issues around the listed shark and ray species, the undertaking of Non-Detriment Findings and discussions within CITES around a definition for traceability and guiding principles which are of relevance to the Members of CCSBT. TRAFFIC also noted issues around permitting of catches on the high seas referred to in CITES as Introduction from the Sea. Documents regarding these issues can be found as agenda documents to the next CoP of CITES at agenda items 42, 52 and 68 <https://cites.org/eng/cop/18/doc/index.php>. TRAFFIC also noted its commitment to assisting countries with implementation, giving the example of convening two workshops in Taipei. TRAFFIC also updated the ERS WG on two projects TRAFFIC is currently running:
- SharkTrack – the development of a traceability system for shark products <https://www.sharkconservationfund.org/project/sharktrack-developing-a-traceability-system-for-shark-and-ray-products/>; and
 - M-Risk – undertaking assessments of the risk of over exploitation for the most traded sharks and rays. <https://www.sharkconservationfund.org/project/assessing-the-risk-of-overexploitation-of-the-most-traded-species-of-sharks-and-rays/>

⁷ International Union for the Conservation of Nature.

⁸ Convention on International Trade in Endangered Species of Wild Fauna and Flora.

⁹ Conference of the Parties.

34. In response to questions, TRAFFIC shared its position on the non-retention of CITES listed sharks was that it supported the trade in products from CITES Appendix II species that were sustainable, legal and accompanied by the required permits/certificates and a positive Non-Detriment Finding. TRAFFIC also noted that there had been discussions within CITES around the difficulties and delays with permitting the transfer of scientific samples, which is still to be resolved. TRAFFIC confirmed and asked for a response from the CITES Secretariat regarding the issuing of permits for scientific samples taken from Marine Turtles listed on Appendix I which are released following capture.
35. The CITES Secretariat's response stated that it had originally flagged the challenges with transfer of scientific samples in the IFS context in its report on sharks to SC69 (<https://cites.org/sites/default/files/eng/com/sc/69/E-SC69-50.pdf>, see paras 20 and 21). There it mentioned the possibility of applying the simplified procedure set out in Resolution Conf. 12.3 (Rev. Cop17) (<https://cites.org/sites/default/files/document/E-Res-12-03-R17.pdf>) Art. XII para a) for trade that will have no or a negligible impact. The CITES Secretariat believes that this could apply to the situation described. Art XII a) i) specifically mentions scientific samples as an example.
36. The CITES Secretariat further advised that if the CCSBT decided to apply simplified procedures it could, under the conditions outlined under subparagraph b) of Art XII, issue partially filled permits prior to leaving the port. This pre-issuing of permits seems to be relatively common practice by CITES Parties to implement IFS, even for transactions that do not involve scientific samples (see SC70 Doc. 34, paragraph 14), and if implemented well, seems relatively straight forward for situations where a vessel is a priori expecting to collect such samples. Alternative approaches, from the submissions by Parties on their experiences in implementing IFS, would be to arrange for electronic transmission of the IFS certificate (see Norway's response on page 28 of the pdf) or for the permit to be issued and then physically brought to the landing site, e.g. by the port inspector (as implemented in Costa Rica for example).
37. BirdLife presented paper CCSBT-ERS/1905/Info16 which provided an update to BirdLife's work since ERSWG12. The Albatross Task Force is currently working in Brazil, Argentina, Chile, South Africa and Namibia to minimise seabird bycatch in 14 fisheries in EEZ¹⁰s. As part of engagement with high seas fleets, port-based outreach for Taiwanese vessels was conducted in Mauritius in 2016 and 2018. With the Taiwan Fisheries Agency, BirdLife is currently working on bird scaring line designs and held a workshop on this topic in April 2019 with industry representatives and international experts. Public outreach on albatross conservation is also ongoing through social media in the UK, Japan, Taiwan, and Brazil. Under the FAO Common Oceans Tuna Project, BirdLife coordinated a workshop in South Africa in February 2019 which was the culmination of a two-year process to undertake a global albatross bycatch assessment across the global tuna fisheries (CCSBT-ERS/1905/23). BirdLife also updated estimates of global albatross distribution (CCSBT-ERS/1905/Info07), which inputted into this global albatross bycatch assessment (CCSBT-ERS/1905/23). The RSPB¹¹ (UK BirdLife Partner) has also collaborated with the British Antarctic Survey to fill tracking

¹⁰ Exclusive Economic Zone.

¹¹ Royal Society for the Protection of Birds.

data gaps (CCSBT-ERS/1905/Info09). In order to develop tools for independent monitoring of mitigation use, BirdLife collaborated with Global Fishing Watch to develop a new method for monitoring night setting use using AIS data, and results were presented at the CCSBT Compliance Committee meeting (CCSBT-CC/1810/3 (Rev1)). As part of terrestrial conservation for albatrosses, the RSPB continues planning and fundraising towards the eradication of mice from Gough Island, which is vital for the protection of the Critically Endangered Tristan Albatross.

38. The meeting noted that the seabird distribution derived from seabird tracking data processed by BirdLife is essential to estimate total seabird mortality and requested BirdLife's assistance to make these data publicly available with regular updates. BirdLife advised that the density distribution layers will be made publicly available on GitHub assuming all data owners agree. The information cannot be updated continuously, but instead it would be updated as required for specific bycatch analysis projects.
39. The Humane Society International (HSI) presented paper CCSBT-ERS/1905/Info16 and reminded Members of its strong focus on seabird conservation, focussing on reducing seabird bycatch in domestic and international fisheries. HSI attends international meetings including CCSBT, ACAP, and UN meetings focussed on Biodiversity Beyond National Jurisdiction. Domestically HSI continues to work on both longline and trawl fisheries seabird bycatch, actively engaged with the Australia's Threat Abatement Plan for Longline Fishing and the National Plan of Action for Seabirds. HSI is concerned at recent data regarding trawl bycatch and are working with management authorities to ensure this is reduced. HSI also has a significant Australian and international campaign focussed on shark conservation, focussed on supporting countries seeking to list sharks under international conventions such as CITES and CMS¹² and participating in the CMS Sharks¹³ Meeting of Signatories as a Cooperating Partner. Within Australia HSI seeks to ensure domestic protection for threatened shark species by nominating them under federal and state legislation, advocating for the reduction in shark bycatch in Australian fisheries as well as campaigning to remove lethal shark control measures in Queensland and New South Wales. The conservation crisis declared by ACAP at their recent meeting, and the UN IPBES¹⁴ report which warns we face an unprecedented extinction crisis without the instigation of transformative change puts this work in further focus and HSI looks forward to working with CCSBT Members to ensure effective action on ecologically related species.

Agenda Item 4. Review of progress with the work program from ERSWG 12

40. The Chair advised that there had been good progress with the workplan from ERSWG12 and that papers have been submitted to this meeting for most elements of the workplan. The only element without a paper or specific progress having been made is the element to "Continue work on trophic relationships with SBT", but this was a general item rather than specific action to be conducted.

¹² Convention on the Conservation of Migratory Species of Wild Animals.

¹³ Memorandum of Understanding on the Conservation of Migratory Sharks.

¹⁴ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.

41. The Chair thanked Members and participants for the progress made on the workplan.

Agenda Item 5. Information and advice on ERS

5.1 Seabirds

42. The Secretariat presented paper CCSBT-ERS/1905/05 on the summary of progress against the modified SMMTG¹⁵ Recommendations and thanked Members and BirdLife for their inputs to the summary of progress. The Secretariat advised that substantial progress had been made against most aspects of the SMMTG recommendations, although there were four areas where little progress had been made, these being:
- Development of mechanisms to facilitate the collection and analysis of DNA from bycaught birds including reference databases;
 - Sharing information on procedures for observer data collection through BMIS;
 - Requesting other tuna RFMO Secretariats to provide brief descriptions of the availability and resolution of fishing effort data; and
 - Development of estimates of background bycatch rates (pre-bycatch mitigation) using retrospective analyses, in order to compare these to current seabird bycatch rates and assess effectiveness of tuna RFMO seabird CMMs.
43. It was noted that progress has been made with the BMIS team to enable CCSBT contributions to BMIS, so the relevant documents can now be included in BMIS if they are provided to the CCSBT secretariat. It was also noted that ERSWG11 expressed varying levels of optimism and assigned different levels of priority to the retrospective analyses, noting issues with data availability and high variability between fleets.
44. Japan indicated its strong reservation on the practicality of estimating background bycatch rates.
45. The Chair commented that the ERSWG's revised SMMTG¹⁶ recommendations are reflected in the multi-year seabird strategy and that this strategy would take over from those recommendations in the future.

5.1.1 Information on stock status

46. ACAP and BirdLife presented paper CCSBT-ERS/1905/22 on the latest update on the status and trends of ACAP-listed albatrosses and petrels in the CCSBT area. This information confirmed the conservation crisis highlighted by ACAP at its recent Advisory Committee and Working Group meetings. The paper notes that in the IUCN Red List, of the 18 species of albatross that overlap with the SBT fisheries, the IUCN lists one as critically endangered (CR); seven as Endangered (EN); five as Vulnerable (VU); four as Near Threatened (NT); one as Least Concern (LC). Of the 7 ACAP-listed species of petrels that overlap with SBT fisheries, the IUCN lists one as EN; three as VU; one as NT and two as LC.

¹⁵ The CCSBT's Effectiveness of Seabird Mitigation Measures Technical Group

¹⁶ Effectiveness of Seabird Mitigation Measures Technical Group.

Overall, 44% of the albatross and petrel species that overlap with the SBT are declining, 24% are stable, 20% are increasing and for 12% the trend is unknown.

47. Notably, of the species listed, two were moved up in threat status, two were down listed and the rest did not change.
48. The Fishing Entity of Taiwan presented paper CCSBT-ERS/1905/Info04, Incidental catch of seabirds by Taiwanese longline fleets in the Southern Oceans, between 2010-2018 (Rev. 1). The mean annual seabird bycatch rate ranged from 0.003-0.037 from 2010-2017 for Taiwanese tuna longline vessels. The paper reported that the bycatch rate of seabirds was not significantly different among vessels with different size and targets, when year and operation location were considered. In addition, the mean bycatch rate of seabirds was similar between Taiwanese and Japanese tuna longline vessels, when operating within the same fishing ground.
49. The importance of this work was noted for better understanding seabird bycatch in the CCSBT fishery. Furthermore, bycatch rates were similar to those of Japan for the area south of South Africa. The total bycatch estimate reported to the CCSBT for the Fishing Entity of Taiwan was an order of magnitude lower than that of Japan. This difference was considered due to spatial and temporal differences in the Fishing Entity of Taiwan's fishing effort compared to Japan's. It was further noted that there is a bycatch in the area where the Fishing Entity of Taiwan targets albacore (ALB), and that ALB targets bycatch is not reported to CCSBT if no SBT was caught. The Fishing Entity of Taiwan supports continued research to look at differences in BPUE between fleets and Members were asked to acknowledge that these results were still preliminary and that the Fishing Entity of Taiwan is open to further research opportunities.
50. In order to assess the overall impact of surface longline fisheries to seabirds, it is noted as necessary to cover all effort regardless of targeted species, while noting that CCSBT fisheries are defined as those efforts where southern bluefin tuna was defined either targeted or caught.
51. The Fishing Entity of Taiwan explained that all large-scale tuna longline vessels, either catch SBT as a target species or not, have their effort included in Figure 3. This will explain differences between these data and data reported to CCSBT.
52. The Fishing Entity of Taiwan explained that these numbers are not a total estimate and have not been scaled up from observer coverage and clarified that there is no summary of mitigation measures or consideration of these in this analysis.

5.1.2 Estimates of ERS mortality and associated uncertainty

53. Australia presented paper CCSBT-ERS/1905/11, which provided an empirical Bayesian hierarchical modelling approach of vessel-level bycatch rates in commercial fisheries.
54. The paper presents an empirical Bayesian approach for estimating vessel bycatch rates that: (i) considers effort heterogeneity among vessels; and (ii) pools the data from similar vessels for accurate rate estimation. The proposed average interaction rate of a vessel is therefore the weighted average pool rate and the standard interaction rate of the vessel. The paper applies this inference method to

the estimation of seabird bycatch rates in the southern bluefin tuna component of the Australian Eastern Tuna and Billfish Fishery (ETBF) to illustrate its capability to provide fishery managers with insights on fleet-wide bycatch mitigation performance and identification of disparate vessels for targeted compliance intervention. This method can also be used by fishery managers to develop fleet-wide performance criteria or quantitative evaluation standards for bycatch species as similar implemented for seabirds in Australia under the Threat Abatement Plan.

55. It was noted that the Bayesian approach complements Australia's targets for management. Australia clarified that vessels are often owner-operated in their fishery, and rarely change the fishing master.
56. Responding to a question, it was confirmed that the previous year's posterior distribution could be used as the prior for the next year.
57. Japan indicated that it observed the similar pattern, i.e. that a small number of vessels have a majority of the seabird bycatch, in its fleet. To the question whether there was a similar correlation with other bycatch species such as sea turtles or sharks, Australia responded that this had not been investigated and reminded the group that this approach was for tactical risk assessment and not bycatch assessment.
58. A question was raised as to whether this same approach could be used in fisheries that exhibit a larger spatial variability than the Australian fishery analysed in this report. Australia clarified that this approach can be applied as long as there is homogeneity amongst vessel behaviour.
59. For the temporal frame of this analysis, Australia clarified that data was from after the introduction of EM.
60. FAO noted that a previous analysis indicated that the number of seabirds around the vessel can determine bycatch rate, and then asked whether temporal and spatial factors could be added to the model. It was clarified that this analysis is to indicate vessel risk, not the factors influencing the risk.
61. Japan indicated potential difficulty of applying such analysis to their fishery, due to large heterogeneity in spatial, temporal and operational variability. It was noted that relatively short trip of coastal operations and access to EM made this approach suitable to Australia's fishery.
62. It was noted that this technique would allow the identification of vessels of concern which may warrant additional management responses.
63. BirdLife presented the results from the final workshop of the FAO ABNJ Global Seabird Assessment that was held in February 2019 (CCSBT-ERS/1905/23).
 - The workshop brought together twenty-seven experts from fishing nations operating in the Southern Hemisphere and representatives from the Secretariats of WCPFC, ICCAT and IOTC. The workshop objectives were to estimate global seabird bycatch in pelagic longline fishing in the Southern Hemisphere with associated measures of uncertainty, to assess the population level impact of bycatch for key species, and to develop a toolbox of methods to estimate bycatch.

- Prior to the workshop, the participants examined methods to estimate seabird bycatch using their own national observer data and some combination of them. Three approaches were identified to use: two BPUE standardisation approaches (GAM and INLA) and one risk assessment approach (SEFRA). At the workshop, observer data by 5x5 degree and by quarter from nine sources were combined for a joint analysis, representing the largest and most comprehensive seabird dataset ever compiled. Estimates of seabird density distribution based on tracking data were also made available to the workshop (CCSBT-ERS/1905/Info07). Total longline effort available from the tuna RFMOs was used to generate the estimates of total seabird bycatch.
 - While the combined dataset covered the years 2012-2016, low levels of observer data prevented an analysis of bycatch trend. Instead, the data were used to produce estimates for 2016, the most recent data available, and the year for which data were most comprehensive. The two best models were selected for each approach (GAM, INLA, SEFRA), plus a Stratified Ratio Based Estimate. The seven analyses produced broadly similar estimates of total seabird mortality, with a mean of 36,000 birds killed south of 20° S in 2016. This estimate does not take cryptic mortality into account. The spatial distribution of predicted bycatch was also broadly similar between most methods, identifying several areas of higher bird bycatch, which arise as a result of high BPUE and/or high fishing effort. All models selected a model incorporating seabird density distribution data. The workshop also examined the impacts of bycatch on selected seabird populations, using a Population Viability Analysis (PVA), forward projection based on demographic data, and in the context of SEFRA.
 - Workshop participants discussed the potential to present the results of the analyses by ocean but concluded that this might be misleading, as differences may be arising as a function of gaps in seabird distribution data. More broadly, the workshop identified multiple sources of bias and uncertainty that can have a significant impact on the estimate of bycatch. The best available information was used in the estimates. Nevertheless, there remain areas for improvement to reduce sources of uncertainty.
64. It was stressed that seabird distribution data had significant impacts on the precision of estimation in total bycatch mortality. When using seabird distribution data, the estimated values became more robust to different estimation methods and had much narrower confidence intervals. It was further noted that while the comparison were made based on calculation using 5°×5° and quarter aggregated data, those experts working with higher resolution data confirmed a good correspondence between seabird density and standardised BPUEs.
 65. BirdLife emphasised the need to repeat global albatross bycatch estimation in a few years' time and the importance of collating fishing effort data across the tuna RFMOs.
 66. On the recommendation to revisit this analysis in a couple of years' time, FAO raised concern that the estimates would change because of updates in input data. FAO asked whether any conclusions could be drawn at this time to inform current decision making or to make any recommendations for data improvement rather than waiting for further work. It was clarified that total estimation of fishing effort and seabird distributions needed to be finalised and therefore those

estimates should be considered as indicative. It was proposed to redo these analyses every 3 – 5 years and compare new estimates with previous estimates to evaluate the reliability of the estimation procedure.

67. It was noted that the report identified the challenges in combining effort amongst different tuna RFMOs, which underlines the challenges associated with using observer data. It was agreed to consider the relevance of those nine challenges outlined in the report in the context of the CCSBT, when developing the strategy and corresponding work plan.
68. The Chair noted that the ERSWG could consider how challenges in utilising observer data could be addressed. Amendments could be made to observer standards, observer training, or recommendations on further analysis.
69. Some participants to the ABNJ meeting stated their confidence in progress and robustness of modelling with integration of seabird information, with particular reference to the SEFRA approach that would enable to quantify sources of uncertainty.

5.1.3 Ecological risk assessment

70. New Zealand presented paper CCSBT-ERS/1905/17 which provided an assessment of the risk of surface longline fisheries in the southern hemisphere to albatross and petrels, for 2016. A collaborative risk assessment of the impact of surface longline fishing on albatross and petrel species was carried out by Japan, New Zealand, South Africa, and Australia. The risk assessment used the overlap between observed surface longline fishing and seabird distributions to model observed captures. The fitted model was applied to unobserved fishing, to estimate species-specific bycatch of seabirds in southern hemisphere surface longline fisheries, in 2016. The bycatch was related to a measure of species productivity to estimate the risk that bycatch is unsustainable. The assessment found that nine of the 25 albatross and petrel species considered had a mean risk ratio higher than one, indicating that the bycatch of these species in surface longline fisheries may not be sustainable. The results were preliminary; however, the analysis demonstrates how distribution information, together with observer data of seabird bycatch, may be used to estimate the impact of fisheries bycatch on seabird populations. Next steps for this analysis include further refinement of the seabird distributions, particularly for populations and life-stages with limited tracking information; exploring the sensitivity of the results to unidentified captures and to seabird distributions; and the estimation of risk at a population level to allow comparison with demographic trends.
71. Japan, a collaborative member of this analysis, provided further information, including observed contradictions between assessment results and other observations. For example, with Amsterdam albatross having a high-risk level and increasing population whereas the population for Antipodean albatross was declining and risk possibly understated. It was further noted that a previous risk assessment presented to WCPFC investigated only a certain number of species with adequate information, while CCSBT-ERS/1905/17 as well as ones tabled at the Common Oceans ABNJ Tuna Project meeting tried to expand the coverage to all ACAP species including those with relatively poor tracking information available.

72. It was noted that analysis of fishing effort and seabird distributions needed to be finalised, and that the analysis heavily relied on the assumption that captures were proportional to overlap of seabirds and fishing effort distributions. Accordingly, the current results should be considered as indicative, even though the methodology and data used in this collaborative analysis representing the best available at this moment.
73. The ERSWG has agreed on the method for evaluating risk to seabirds from longline fishing for SBT (CCSBT-ERS/1905/17). This risk assessment, applied to data from 2016, found that for nine of the 25 albatross and petrel species the estimated annual incidental bycatch in surface longline fisheries exceeded the population productivity.
74. New Zealand presented paper CCSBT-ERS/1905/15 which provided an analysis to illustrate potential high-risk areas using the previously agreed upon Option 3A. This paper addressed the definition of high-risk areas for seabirds, based on the recommendations of the most recent meeting of the ERSWG (ERSWG12). The meeting recommended that the summed mean risk, across assessed species, be used as a basis for defining high-risk areas. This definition was applied to the recent risk assessment. If a risk threshold was chosen so that all 5-degree cells with a mean aggregated risk over 0.96 were considered high-risk areas, then there are four 5-degree cells that were high risk (two areas in the southern Indian Ocean, near South Africa, and two areas in the Tasman Sea). If a risk threshold was chosen so that all 5-degree cells with a mean aggregated risk over 0.32 were considered high-risk areas, then there are seventeen 5-degree cells that were high risk. Reducing the bycatch within the high-risk areas by 50% for either option would reduce the mean risk for wandering albatross to below one. The analysis indicated that there is no way to define areas that contain much of the risk, without also including much of the surface longline fishing effort.
75. Japan congratulated New Zealand in its attempt to integrate the different risks among species into the definition of high-risk areas.
76. Responding to a question, it was clarified that these defined areas were not completely dependent on fishing effort patterns but could change according to new effort distribution data.
77. It was noted that this paper highlights the importance of CCSBT Member fishing effort with 86.5% of the risk in the core CCSBT areas and 87.6% of the fishing in the core CCSBT area being by CCSBT Member countries. It was also noted that non-Members' fishing effort was also used in this analysis to identify high-risk areas.
78. A question was raised as to whether the risk identified was proportional to fishing effort and if this effort was displaced would the high-risk areas shift in accordance. New Zealand agreed that this assessment is a snapshot of risk. However, this assessment could be periodically updated.
79. New Zealand presented paper CCSBT-ERS/1905/16 which proposed a definition of high-risk areas. The paper presents two options for risk thresholds that can be used to identify areas to be considered as "high-risk areas". Option 1 uses a high level risk threshold. This risk thresholds encapsulates around a quarter of the total main risk and two out of nine species that are considered at-risk of decline from longline fishing according to the risk assessment in the "high-risk areas". The

CCSBT effort captured under option 1 accounts for 13% of total CCSBT effort. Option 2 use as a medium level threshold. The risk threshold encapsulates around half of the total mean risk and four out of the nine species that are considered at risk of decline from longline fishing according to the risk assessment in the “high risk areas”. As a starting point for discussion New Zealand proposed option 2 as the preferred option. This is because option 2 is the more precautionary option as it has the greatest potential benefit in terms of reducing risk to at-risk species and would be more robust to changes in fishing effort distribution than option 1, given the larger areas.

80. It was noted the identified high-risk areas may change if the analysis is updated. Further analyses have the potential to identify different areas. However, bycatch of at-risk species occurs in the defined areas. Therefore, there is an opportunity to positively impact these species by managing these areas identified as high risk.
81. Japan pointed out that even supporting general concept, this would reflect the area of high bycatch impacts according to current fishing patterns and would not be appropriate as a basis for management recommendation due to dynamic nature of fleet operations, as well as taking into a generally slow process in reaching agreement of management actions.
82. Japan also noted that overlap of seabird and effort distributions and fleet-specific catchability are two main contributors of determining the areas with high risk. It pointed out that the reduction of risk could be achieved either by changing fishing efforts in the areas or reducing fleet-specific catchability through better utilisation of mitigation measures. For example, the Japanese foreign charter fleet in South Africa and New Zealand had the lowest catchabilities among the SBT fisheries, even following the same operational procedures as its high-seas component.
83. New Zealand acknowledged Japan’s comments and noted that defining these high-risk areas is the first step in the process of addressing the risk. New Zealand further noted that if this first step is not taken there would be further delays in determining management of the high-risk areas. In lieu of high-risk areas, management could be applied to the whole range of CCSBT effort, placing an unnecessary burden on operators in lower risk areas.
84. New Zealand stated that the discussion should also move away from potential implications, because as noted by ERSWG12, “this analysis should not prejudice further discussion surrounding the definition of high-risk areas and the potential application of remedies.” Furthermore, the remedies are not restricted to mitigation measures, as they could include amending reporting or increasing observer coverage.
85. The Chair noted that these high-risk areas could either move dynamically with fishing effort or could have ecological drivers and be stable.
86. Japan supported this methodology as one way to identify potential areas of high impacts under current fishing operations and suggested to include this as a part of risk assessment report.
87. HSI noted that a preferable approach to high-risk areas would be to assign all areas below a certain latitude, for example, 30 degrees south.

88. It was noted by the Chair that this group could provide the Extended Commission with advice on the trade-offs involved in different high-risk options for SBT fisheries.
89. Paper CCSBT-ERS/1905/Info06 was presented by BirdLife and utilised tracking data from 790 individuals to assess spatial overlap of four threatened South Georgia seabird species with pelagic longline fishing effort. Hotspots were identified in the south-east and south-west Atlantic and the south-west Indian Ocean between May and September. The fleets of Japan and Taiwan were recognised as posing greatest potential risk to these populations due to having the greatest overlap with these species.
90. BirdLife presented CCSBT-ERS/1905/Info07 which provides an analysis of albatross and petrel distribution based on tracking data, using an updated methodology that incorporates additional demographic data to estimate population structure (adults, juveniles, immatures), as well as additional tracking data. These seabird density distributions were made available for the global seabird bycatch assessment conducted under the Common Oceans project (CCSBT-ERS/1905/23), and the intention is that the layers will be made publicly available once this paper is published in the peer-reviewed literature. Tracking data gaps for juveniles and immatures continue to be a limitation to the estimation of albatross and petrel distribution, given that they represent substantial proportions of the population. This paper was also presented in early May 2019 at the working groups to ACAP, and data holders were to submit further available tracking data to the BirdLife International Seabird Tracking Database to enable analyses of overlap and interactions between ACAP species and fisheries.
91. A question was raised as to whether there could be any difference in impact to the population by removing a juvenile or removing a breeding adult.
92. BirdLife presented CCSBT-ERS/1905/Info08 which reviewed observer coverage for monitoring bycatch of seabirds and other ETP¹⁷ species. The paper observed that observer coverage of 5-10% of total effort has long been recognised as a barrier to understanding the nature and extent of ETP bycatch. Despite wide recognition of the benefits of higher levels of coverage, required levels have not increased across tuna RFMOs in recent years. It was recommended that observer coverage must be significantly increased, and recognised 20% coverage as a pragmatic first step, with higher targets of 100% to be reached in a time bound manner. The important role of EM in reaching these higher targets to manage the impacts of pelagic longline fishing on ETP were highlighted.
93. BirdLife presented CCSBT-ERS/1905/Info09 which detailed new information on the at-sea distribution of grey-headed albatross juveniles from South Georgia. Juveniles were found to utilise different areas to non-breeding adults, and most strongly overlapped with the Japanese fleet in the Central Atlantic and with the Taiwanese fleet in the Pacific. The high overlap in the Atlantic coincides with a bycatch hotspot reported by the Japanese Observer Agency and suggests that high bycatch in that area is likely of birds from South Georgia. It was noted that reducing bycatch in these two fleets would have an important role in reducing the threat to this threatened species.

¹⁷ Endangered, threatened and protected species.

94. It was noted that 7% of the total population lives in South Georgia and that collaboration with New Zealand will give a more complete data set for this species.
95. The Chair reopened the discussion on paper CCSBT-ERS/1905/16, on defining high-risk areas. A question was put to Members to consider alternative ways to define high-risk areas and how these areas could be identified.
96. Japan reiterated its position that New Zealand's approach allowed to identify the areas of high impacts of bycatch under the status quo fishing operation. Japan repeated its suggestion to include this as a part of the risk assessment to highlight areas with high impacts posed by the SBT fishery to seabirds.
97. It was noted that recommendations could be provided to the Extended Commission to either reduce effort or reduce seabird catchability in areas defined as high-risk.
98. The Chair raised a question as to whether future risk analyses should focus on fewer seabird species if there are limitations in data quality. Japan indicated its preference to restrict the analysis to those species with relatively good information available on their distribution and population. The Chair noted that the current risk analysis is based on the best available data. The Chair further noted a sensitivity analysis could be presented in the future in which risk analyses are restricted to species with high quality distribution data.
99. New Zealand asked the group to agree that Option 2 identifies areas that do pose high risk to seabirds. It was noted that there was not support to put forward Option 2 as the definition of a high-risk area.
100. New Zealand clarified that Option 3A was used in the risk analysis. New Zealand further clarified that cumulative risk was used to define high-risk areas with species risk weight by risk status.
101. New Zealand presented tabulated trade-offs for different high-risk area definition options. After minor modification based on follow-up discussion, New Zealand presented a revised version of tabulated results for the three options put forward as potential high-risk areas. The revised table is provided at **Attachment 6**. Row four of the tabulated results was changed from the previous version to show the number of at-risk seabird species with more risk inside the defined area than outside, as this separated these options from any potential management actions. Some minor clarification of terms occurred but no changes were proposed.
102. The group agreed that the recommendation on methodology on defining high-risk areas and the three options presented would form a key part of the advice in the work report. The ERSWG agreed that the high-risk areas analysis should be incorporated into the southern hemisphere risk assessment analysis. The ERSWG has tabulated the options for potential high-risk areas and their trade-offs in **Attachment 6**.

5.1.4 Assessment and advice on mitigation measures

103. New Zealand presented paper CCSBT-ERS/1905/18 which provided an analysis of differences in bycatch rates between fleets. At ERSWG12, New Zealand agreed to lead a work plan item on analysis of difference in seabird bycatch rate

between fleets with collaboration from all Members. Information on seabird captures was requested from Members for captures per area, per yearly quarter, and per mitigation measure set up. Information was received from Australia, the Fishing Entity of Taiwan, Indonesia, and New Zealand. There was indication that area, time of year, and mitigation measure set up had an impact on seabird capture, however, the analysis was severely restricted due to the missing data from other Members so firm hypotheses or conclusions were unable to be reached. New Zealand continues to support the conclusion reached at the ERSWG12 that this analysis would benefit future conversations, and we're therefore likely to see stronger commitment from Members to collaborate by providing information.

104. New Zealand was thanked for its efforts conducting this analysis. It was noted that this analysis compared bycatch rates using observer-derived data and that data sources other than observer data needed to be utilised to provide a comprehensive assessment of bycatch rates. New Zealand responded that data from sources other than observers could be used in future analysis.
105. The Chair noted the issues in gaining access to the data required to undertake this analysis. The Chair further raised the question as to whether this analysis should be conducted a second time or should alternative methods be explored. The Chair further asked New Zealand to clarify the issues encountered with the data. New Zealand clarified that half of Members were able to supply the data requested, with no data being supplied from the other Members. New Zealand further stated that there could be benefit from continuing the analysis if all Member collaborated and provided data.
106. In response to New Zealand's clarification that only half the Members supplied the data requested, Japan explained that the data collected by their observer programme did not allow to disaggregate bycatch information in the way as requested, i.e. mitigation usage were monitored for individual hooks but bycatch data were not collected in conjunction with a specific identification of hooks. It clarified that mitigation usage was calculated by the distribution of mitigation gear to vessels and that it was not possible to determine mitigation use for this analysis.
107. Japan noted that Australia's fishery exhibited different behaviour, making the reporting of mitigation usage applicable. Japan further noted that spatial effort patterns exhibited by their fleet was the controlling factor in determining seabird bycatch.
108. It was noted that data reporting at the 5°×5° spatial scale would allow the analysis to assess spatial variability in seabird bycatch rates.
109. Japan reminded the meeting that this analysis was proposed to investigate the difference in seabird bycatch rate between Japan and the Fishing Entity of Taiwan. Japan addressed this issue through the collaboration with the Fishing Entity of Taiwan that was tabled as CCSBT-ERS/1905/Info04, showing the main cause of difference would be differences in spatial distribution of fishing effort and differences in reporting practice.
110. It was noted that data limitations did not allow for the analysis to continue. It was further noted that there was an opportunity to think about future data requirements, as well as how EM could be used to collect these data.

111. An observer acknowledged the challenges in the analysis of these data. The observer further noted the importance of collaboration between Members in the analysis of these data.
112. A question was raised on an objective of this analysis. It was noted that the relevant results could be also obtained as a part of the SEFRA model approach and New Zealand clarified that SEFRA model outputs included vulnerability and catchability. However, New Zealand further pointed out that the mechanisms behind differences in fleet catchability could not be derived from the data provided to the modelling approach.
113. FAO noted that this analysis could inform recommendations for future data collection improvements. FAO further noted WCPFC has been asked to analyse seabird mortality and whether it has changed over time with the implementation of mitigation measures. One option which was considered for sea turtles at WCPFC last year was to collect detailed data on operational factors only when a species of special interest is caught. Japan pointed out that the discussions on the sea turtle data collection requirements proposed by the United States at the WCPFC was not agreed, and Japan was in the strong opposition against this specific proposal. FAO then raised the question as to whether current data collection requirements limited this analysis. The Chair clarified that summaries of these data are reported. The Chair further clarified that data were not reported at a spatial scale to make this analysis possible.
114. Japan emphasised their confidence on quality of data collected in their observer programme that was in line with minimum standards defined in tuna RFMOs. Japan repeated its explanation that collecting bycatch data on a hook by hook basis according to the mitigation measures utilised to individual hooks was not feasible, since their fleet often applied multiple types of weighting scheme within one operation. New Zealand queried how Japan had completed Table 1 in the ERSWG report template, which documents mitigation measure use. Japan responded that mitigation use was monitored based on hooks number in use according to types of weighting scheme through observer reports.
115. It was concluded that it would be useful to continue this analysis, however also noted reservations among Members of the usefulness of this analysis.
116. New Zealand provided paper CCSBT-ERS/1905/Info01 which outline a smaller potential solution to mitigate seabird bycatch in pelagic longline fisheries.
117. ACAP presented paper CCSBT-ERS/1905/Info05, which contains ACAP's best practice mitigation advice for preventing the incidental mortality of albatrosses and petrels in longline fisheries, which continues to be a serious global concern – indeed, a crisis – and was the major reason for the establishment of ACAP. The birds are killed as they are attracted to the baits on the longline hooks as the gear is deployed; they can also become hooked or entangled as the gear is hauled, in which case with careful handling many can be released alive. The main elements of the guidelines remain as most recently updated by ACAP in 2017. In particular, ACAP continues to recommend as best practice the simultaneous implementation of a combination of three mitigation methods. This advice is based on an ongoing review of the scientific literature. The three methods are: Weighted branch lines; Bird-scaring lines (including some specific advice for bird-scaring lines for small vessels); and Night-setting. As an alternative to the

combined three methods, ACAP recommends use of a hook-shielding device, the hook pod, which shields the hook until it is at a prescribed depth of 10 m or immersion time of 10 minutes. This can be used on its own to replace the three combined recommended measures. There were no major changes to ACAP's best practice advice adopted at the recent working group and Advisory Committee meetings in Florianopolis, Brazil, in May 2019. Minor changes adopted included some additional language on the advantageous compliance-related attributes of night-setting and line-weighting in the section of the advice dealing with these individual measures. In addition, some guidelines on safety procedures for line-weighting were developed and various ACAP fact sheets were updated. These require some minor modifications before becoming available on ACAP's website.

118. Following this presentation, Australia noted that the guidelines mentioned above on improving safety while hauling weighted branch lines during pelagic longline fishing operations would be available soon. The Member further noted one hazard when hauling weighted branch lines is fly backs, this paper would outline procedures for responding to this workplace hazard.
119. The ERSWG did not seek to amend its previous advice that the level of interaction between seabirds and SBT fisheries is still a significant level of concern.
120. The ERSWG noted that ACAP has confirmed that the combined use of weighted branch lines, bird scaring lines and night setting remains the best practice approach to mitigate seabird bycatch in pelagic longline fisheries. In addition, ACAP has since 2016 also endorsed the inclusion of a hook-shielding device (meeting prescribed performance requirements) as a standalone measure to replace the three combined recommended measures.

5.1.5 Seabird species identification

121. No papers were submitted or presented on this agenda item.
122. It was noted that ACAP is updating its species identification guide to be more comprehensive and with photos better suited to assist observers in making identifications of bycaught seabirds. In addition, there are clear guidelines on taking photographs for identification, as well as feather samples for DNA analyses, as well as for plastics contamination. It was further noted that feather sample is an effective method for species identification. Additional work on establishing databases is also being undertaken.

5.1.6 Multi-year seabird strategy

123. Australia presented paper CCSBT-ERS/1905/12 on developing a seabird bycatch mitigation strategy. The ERSWG commenced consideration of a multi-year seabird strategy at ERSWG12. ERSWG12 decided that the strategy should identify, among other things, research, monitoring needs, actions for reducing uncertainty and associated risks, and the recommendations from the Report of the SMMTG. This paper outlines additional work on a multi-year strategy and provides actions against objectives with proposed timeframes for further discussion with Members.

124. Japan asked for a clarification as to whether this strategy was specific to CCSBT or to tuna-RFMOs in general. It was responded that while some actions will involve other RFMOs, the issues in the strategy are of specific importance to CCSBT.
125. Japan noted that the overall objective, which provides a specific target and timeframe for reducing seabird mortality, implies that we can accurately measure seabird bycatch, however, as noted previously at this meeting, this is not currently possible. FAO suggested a rewording of the overall objective so that it is clear that the bycatch reduction represents a true decline in bycatch by fisheries, rather than a decline in bycatch due to declining seabird populations.
126. BirdLife thanked Australia for developing this strategy and noted that the targets to reduce seabird bycatch by 50% in three years, and by 95% in five years, are both essential and achievable. BirdLife reiterated the need for both incentives for fishers and compliance measures to implement the necessary mitigation measures, including the implementation of effective monitoring systems. BirdLife suggested that a 100% coverage rate for monitoring and reporting, by both human observers and EM, would be appropriate. Japan noted that data from 2017 would be unsuitable for use as a baseline to measure the reduction in seabird bycatch. Australia agreed that a previous year could be used.
127. New Zealand and Japan queried how the multi-year strategy is expected to complement the ERS Work Plan. The Chair noted that the strategy would contain long-term priorities that the intersessional Work Plan actions could both support and be measured against. It was noted by the Secretariat that both of these documents need to be approved by the Extended Commission.
128. Japan noted that the strategy would benefit from redrafting in order to avoid repetition, overlap in the proposed objectives, and capture recent development in assessment methodologies and understanding on the nature of seabird bycatch.
129. A small working group further considered the strategy and proposed a revised overall objective and specific objectives for the strategy for consideration by the ERSWG. The ERSWG agreed to the revised objectives, which are provided at **Attachment 7**.
130. HSI, BirdLife and ACAP expressed concern about the wording of the overall objective, particularly the inclusion of the word “significant”. HSI noted earlier discussions that quantitative figures for seabird bycatch were not available and so it would be difficult to measure “significant” adverse impact.
131. BirdLife also raised its concerns that the specific objectives did not explicitly discuss minimising seabird bycatch, noting that international law such as the UN Fish Stocks Agreement requires both minimising bycatch and minimising impacts on species. Therefore, BirdLife suggested either specifically including “minimising bycatch” in objective one, or adding an additional objective to include this.
132. BirdLife, HSI and ACAP also noted that there was no quantitative target and therefore no way to measure progress against the overall objective, requesting the original target of 50% reduction of incidental seabird bycatch in three years and by 95% in five years (which featured in the draft strategy) be included. ACAP suggested that an alternate option would be to use the model used by some countries in their NPOA - Seabirds setting an interim target to achieve a bycatch

rate of no more than 0.05 birds per thousand hooks (such as that included in Australia's longline Threat Abatement Plan). This would provide a starting point against which to measure progress, to be reviewed over time. TRAFFIC reminded Members of the independent review of the Performance of CCSBT 2009-2013 conducted by Garcia and Koehler which identified the need to achieve better goals against seabird bycatch and to measure performance against a strategy which includes quantitative targets.

133. Japan noted that given the uncertainties with current estimates of seabird mortality, it was not appropriate to set a quantitative target at this time. However, that did not preclude a target being set in the future. It was also noted that "minimising seabird bycatch" is implicit in the specific objective discussing reducing the impact of seabird bycatch.
134. Members discussed and noted during the formulation of the revised overall objective that minimising bycatch as a whole may not be effective to prevent the adverse impact of fisheries to some seabird populations in urgent need of conservation. In other words, the new overall objective is intended to strengthen the previous draft objective. However, the term "significant" is needed because the bycatch of even one bird may cause a problem for some populations with extremely low abundance.
135. It was agreed that the ERSWG will intersessionally develop a draft list of strategic actions under each of the specific objectives of the Multi-year Seabird Strategy.

5.2 Sharks

5.2.1 Shark species of relevance to the CCSBT

136. ERSWG12 agreed that Members would provide catch details of the 12 shark species that CMS-Sharks¹⁸ considered "CCSBT relevant" (see CCSBT-ERS/1703/Info15). The Secretariat presented paper CCSBT-ERS/1905/06 on shark species of relevance to the CCSBT, which summarised the information provided by Members and ERSWG Data Exchange.
137. The paper noted that all but 2 of the 12 species considered CCSBT relevant by CMS-Sharks are present in the SBT fishery, some were caught in substantial numbers with others caught infrequently. Additional species were also identified as present in the SBT fishery using EDE data that could also be considered to be CCSBT relevant.
138. CCSBT Members discussed what species should be considered as CCSBT relevant, the degree of monitoring required and whether to report all CCSBT relevant species to the ERSWG Data Exchange.
139. TRAFFIC noted the number of shark species being caught in CCSBT operations are greater than just those relevant from CMS Sharks. TRAFFIC was concerned with the large number of discarded dead sharks. It further noted that some of the species are more susceptible to mortality if caught, such as the crocodile shark.

¹⁸ Convention on the Conservation of Migratory Species of Wild Animals and the Memorandum of Understanding on the Conservation of Migratory Sharks

140. TRAFFIC queried Japan on the numbers of discarded blue sharks and why there were such a high number that were dead. Japan advised that landing blue shark in overseas ports has become an issue, so the fleet is discarding them instead.
141. The implications on reporting by Members of adding more shark species to the list of relevant species to CCSBT was also queried. The Secretariat responded that this work has double checked the list developed by CMS Sharks for what species are CCSBT relevant. The Secretariat suggested for species Members deem as relevant to CCSBT, then Members should collect and report species-level data on numbers caught and discarded. Currently, CCSBT only requires species-level reporting for three species.
142. The large number of sharks unidentified in Table 4 of paper CCSBT-ERS/1905/06 was noted. It would be a challenge for Members to better identify sharks if a larger list was required. The reported number of the most of relevant shark species with very small catches was also noted.
143. The Chair commented that the work was a useful exercise to identify the most commonly caught species of sharks in CCSBT. The Chair also noted CCSBT has minimal effect on porbeagle populations and in the absence of information on shortfin mako and blue shark the previous advice is still current.
144. The FAO noted that, except for the great white shark and basking shark, the species in Table 2 of paper CCSBT-ERS/1905/06 require reporting to species level in both the WCPFC and the IOTC and suggested that including this requirement in CCSBT would be both consistent scientifically and operationally.
145. That data provided by Members indicated that 10 of the 12 shark species considered CCSBT relevant by CMS Sharks are present in the SBT fishery and additional species could also be considered to be CCSBT relevant. The three mostly commonly caught species (blue shark, porbeagle and shortfin mako) are already required to be reported as part of the EDE. There was no agreement to expand the list of shark species in the EDE reporting template.

5.2.2 Information on stock status

146. FAO presented paper CCSBT-ERS/1905/10 on porbeagle sharks. The Southern hemisphere porbeagle shark status assessment was a collaborative study involving many countries, with New Zealand, Japan, Argentina, Uruguay, and Chile providing standardised CPUE and other types of indicators. The population structure, considered unlikely to comprise a well-mixed stock, was subdivided into five subpopulations or regions by longitude. The Western Indian/Eastern Atlantic, Eastern Indian, and Western Pacific regions were assessed using indicators and a spatially explicit sustainability risk assessment. The Eastern Pacific and Western Atlantic regions were assessed with indicators only. Catch rate indicators were short, variable, and uncertain, with most either stable or increasing. Only the Argentinian size and sex indicators showed trends, with a small decline in sizes for both sexes, and a slight trend towards less female bias. The quantitative risk assessment estimated the highest fishing mortalities in the Western Indian/East Atlantic Oceans, and lowest in the Western Pacific Ocean. Risk was determined from the relationship between F estimates and a Maximum Impact Sustainability Threshold (MIST), for three alternative values: $F_{msm} = r/2$, $F_{lim} = 0.75r$, and $F_{crash} = r$. For all assessed regions and in all years assessed

(1992-2014), F was less than 9% of the F_{crash} , less than 12% of F_{lim} , and less than 18% of F_{msm} , and fell to half those levels in more recent years. For all areas combined, and over all years and MISTs estimated, there was at most an 8% probability that F exceeded the MIST. These scenarios are based on 100% capture mortality, and if some porbeagles survive their encounter with the fishery this would reduce the estimated risk levels even further.

147. TRAFFIC asked about the reliability of porbeagle data in the Japanese historical data and what the implications may be if the catches were much higher than reported. They also asked about the distribution of porbeagles and the adult refuge area referred to in the paper. Finally, TRAFFIC commented that the information provided in the paper and used in the assessment has potential implications for CITES non-detriment findings.
148. FAO responded that to their knowledge Japan had provided the best available data. In addition, given the distribution of adult porbeagles further south of 56 degrees South, and the fact that historical fishery records show fishing had only gone to 56 degrees South, it is likely that the adult refuge from fishing has existed through time and still exists.
149. Japan confirmed that the Japanese data which were provided for the Southern hemisphere porbeagle shark status assessment were the best available scientific information.
150. The ERSWG examined the Southern hemisphere porbeagle shark status assessment (undertaken under the Common Oceans (ABNJ) Tuna Project) provided at paper CCSBT-ERS/1905/10). The ERSWG considered that the assessment represents the best available science on the status of the stock. For all assessment areas combined, and over all years and Maximum Impact Sustainability Thresholds (MIST) assessed, there was at most an 8% probability that fishing mortality is exceeding the MIST. The MIST is a kind of limit reference point which indicates a population's ability to withstand fishing pressure. The greatest contributions to fishing mortality were made by the pelagic longline fisheries, with the largest contribution (70-90%) from fleets targeting southern bluefin tuna or a mixture of southern bluefin and albacore tuna.
151. The Secretariat briefly introduced CCSBT-ERS/1905/Info12, 13 and 14. Info 12 provided CITES proposal 42 for listing of short and longfin mako sharks on CITES Appendix II. Both species are caught by CCSBT Members, particularly shortfin mako sharks. Info 13 and Info 14 provided assessments of the proposal by the FAO Expert Advisory Panel and the CITES Secretariat respectively. Both assessments concluded that the available data do not provide evidence that the species meets the CITES Appendix II listing criteria.
152. TRAFFIC tabled paper CCSBT-ERS/1905/Info15, which provided the IUCN/TRAFFIC analysis of CITES proposal 42.
153. The FAO noted that shortfin mako assessments were planned in other RFMOs including:
 - May 2019, Revised stock assessment by ICCAT;
 - Sept 2019, Indicators assessment scheduled by IOTC;
 - Sept 2020, Stock assessment scheduled by IOTC; and
 - Aug 2021, Stock assessment scheduled by WCPFC (for the South Pacific).

154. The ERSWG confirmed its previously agreed advice for all shark species caught in SBT fisheries, that there were currently no specific concerns about shark bycatch that warranted additional mitigation requirements.

5.2.3 Estimates of ERS mortality and associated uncertainty

155. No papers were submitted or presented on this agenda item.

5.2.4 Threat assessment

156. No papers were submitted or presented on this agenda item.

5.3 Other ERS

157. Australia presented paper CCSBT-ERS/1905/13. EM has the capacity to collect fisheries-dependent data to support fisheries management decision-making. Following successful pilot studies, EM was introduced into several Australian Commonwealth fisheries in 2015, including the ETBF and the Gillnet, Hook and Trap (GHAT) sector of the Southern and Eastern Scalefish and Shark Fishery (SESSF). Two years of EM analyst and fisher-reported logbook data from the ETBF and GHAT sector were compared to examine the level of congruence in reporting of both retained and discarded catch and protected species interactions. In general, congruence between EM analyst and fisher-reported logbook data in both the ETBF and GHAT sector was higher for retained than for discarded catch, and the ETBF had a higher level of data equivalency than the GHAT sector. Fishery-wide estimates of congruence, however, concealed a large amount of variation among individual and groups of species. EM analyst and fisher-reported logbook data were highly congruent for some species (e.g. tunas, swordfish and gummy shark), but for others there were clear taxonomic (e.g. escolar and rudderfish), identification (e.g. sharks, marlins) and reporting (e.g. draughtboard shark and elephantfish) issues, which reduced overall congruence. There was evidence of increased congruence through time, particularly for discarded bycatch species in the GHAT sector, due presumably to increased manager feedback and communication with fishers on their logbook reporting. While EM analyst and fisher-reported logbook interactions with protected species in the GHAT sector were equivalent, this was not the case for species other than seabirds in the ETBF. In the ETBF, a greater number of interactions were reported by fishers in their logbooks, suggesting a need to modify existing or install additional EM technology to improve on-board vision for the EM analyst. It is important to review the performance of any integrated EM system through time to ensure it is fulfilling the data requirements for the fishery and meeting the overall objectives of the program.
158. Australia presented paper CCSBT-ERS/1905/14. Technological advancement has allowed for consideration of EM as a tool for improving the accuracy of logbook data and/or increasing the quantity of fishery-dependent data collected. In Australia, an integrated EM system was implemented in several managed fisheries, including the ETBF and the GHAT sector of the SESSF from 1 July 2015. Logbook data from the first two years of EM operation were compared to the previous six years, to measure changes in reported nominal catch and discard

per unit effort (CPUE and DPUE) and interactions with protected species per-unit-effort (IPUE). No significant increase was observed in CPUE between non-EM (2009–2014) and EM (2015 and 2016) years for any species group in both the ETBF and GHAT. In contrast, DPUE increased significantly during the EM years for target, by product and bycatch species in the ETBF and for target species in the GHAT sector. There was a significant increase in the IPUE for seabirds, marine mammals and turtles in the ETBF and for dolphins and pinnipeds in the GHAT sector. While not discounting possible environmentally driven shifts in availability and abundance, as well as individual vessel effects, the weight of evidence suggests the use of an integrated EM system has led to significant changes in logbook reporting of discarded catch and protected species interactions, particularly in the ETBF. Assuming this supposition is valid, fishery-specific factors that might have influenced reporting behaviour were identified.

159. In response to a question from TRAFFIC, Australia clarified that the logbook catches shown were not validated by observers as the EM program replaced observers, and observers were no longer deployed in the fishery. Australia also noted that no comparison of bycatch interactions rates previously obtained by observers had been done with the EM data, but that may be done in the future.
160. The ERSWG noted the potential for EM to improve the reporting of the number of ERS interactions, but that EM may not be applicable to all fisheries targeting SBT at present.
161. Japan presented papers CCSBT-ERSWG/1905/21, Info 2 and Info 3, which show the result of a series of study of biological aspects of butterfly kingfish *Gasterochisma melamps* in terms of distribution, body size, spawning, migration, global catch amount and CPUE. The author stated that SBT fisheries is not likely to influence on butterfly kingfish stock and that the understanding of biological aspects of other ecological related species are valuable for understanding of that of SBT.
162. The Secretariat noted that there was nothing new from IOSEA Turtles¹⁹ to report to ERSWG.

5.4 Trophic interactions

163. No papers were submitted or presented on this agenda item. The meeting had nothing to note on this item.

Agenda Item 6. Education and public relations activities

164. BirdLife presented CCSBT-ERS/1905/09, which was developed to fulfil the request from the CCSBT Compliance Committee that the Secretariat work with BirdLife and Members to develop a proposal to enhance the implementation of ERS measures through outreach/education and to verify compliance with measures (CC13 paragraph 115). The document represents a first outline of a proposal for discussion by ERSWG. The document has four proposed activities:

¹⁹ The Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia.

(i) technical innovation of automated systems to allow fishery managers to monitor automatically vessel-level implementation of bycatch mitigation measures, in three or more countries; (ii) supporting a group of CCSBT Members and key ports to undertake training of port inspector personnel to increase capacity to monitor presence of bycatch mitigation measures onboard vessels; (iii) education and outreach with fleets, including port-based outreach and national-awareness workshops; (iv) in 2021 or 2022, repeating the global seabird bycatch estimate (undertaken under the current Common Oceans project), to assess change in bycatch levels since 2016. The proposal envisages that all monitoring activities would be undertaken by Members themselves, and the role of this project and potential project partners (such as BirdLife) would be solely to support the technical innovation and any capacity-building required.

165. One possibility for external funding is from the UN Global Environment Facility (GEF) via the FAO, for projects related to Areas Beyond National Jurisdiction (ABNJ). GEF funding requires there to be substantial co-financing of project activities.
166. HSI noted its support for BirdLife's proposal.
167. Both Japan and Taiwan asked about the funding of this proposal. It was noted that while there were several potential sources, ABNJ (phase II) was the most likely source of funding.
168. In response to a question about timing of the proposal, FAO provided an overview of the ABNJ process, noting that ABNJ phase II would likely not be operational until 2021 at the earliest.
169. On a related funding matter, FAO commented that it was unclear if BMIS would be maintained once ABNJ phase I finished, although funding is being sought from other sources. FAO noted that the BMIS website would remain up, however it is unclear whether Members will be able to upload new documents to the website.
170. Japan queried how the proposed update of the global seabird mortality estimate would sit in this project. They also commented that just funding an update of this estimate, rather than establishing a mechanism for this update to continue on a regular basis in the long term, may not be the best use of the funding.
171. BirdLife noted the importance of transparency by undertaking an updated global assessment as a part of the CCSBT work plan. The strength of a global collaboration within and beyond CCSBT, and the potential availability of FAO funds for the project, were the main reasons to include the updated assessment in the draft proposal.
172. Japan further queried the focus on port inspections and training for port inspectors, rather than observers in the proposal. They noted that what can be accomplished at the ports is limited, as implementation of mitigation measures cannot be monitored in ports.
173. BirdLife noted that suggestions from Members such as including observer training would be considered during proposal revision.
174. The Secretariat noted that whilst there is support for the proposal in principle, the document would need to be revised.

Agenda Item 7. Future work program

175. The ERSWG developed the following workplan. Tasks of an ongoing or administrative nature are not shown unless they are new for 2020.

Activity	Approximate Period	Resource
Refine the proposal “to enhance the implementation of ERS measures through outreach/education and to verify compliance with measures”.	CC 14	BirdLife, Secretariat, Members
Provide the Report of ERSWG13 to the other tuna RFMOs when it is made public.	November 2019	Secretariat
Share documents, formats and procedures for observer and electronic monitoring, seabird bycatch data collection through a centralised portal, e.g. the Bycatch Mitigation Information System hosted by WCPFC.	July 2020	Members, Secretariat
Provide revised historical data for the EDE that includes all mortalities (i.e. both discard mortalities and retained commercial catch).	July 2020	Australia, Korea
Provide 2019 EDE data in accordance with the new EDE template. Members are also encouraged to voluntarily provide revised historical data in the same format.	July 2020	All Members
Translate the ACAP seabird species identification guide into key languages (e.g. Indonesian, Japanese, Korean, and Taiwanese) and by establishing a reference library of seabird bycatch photographs to assist observers in identifying bycaught seabirds to specific levels.	July 2020	CCSBT and ACAP Secretariats, Indonesia, Korea, Japan, and Taiwan
Customise ACAP guidelines for photographing and sampling dead bycaught seabirds for DNA, as an additional aid to identifying seabirds to specific levels. The ACAP guides to photographing dead seabirds and collecting feather samples for DNA analysis provide a template for the improved procedures and methods.	December 2020	CCSBT and ACAP Secretariats
Trial production of Table 1 of the revised ERSWG annual report template for each Member.	ERSWG 14	Secretariat, Members
Develop a template for summarising the key points of the ERSWG report that could be provided to other tuna RFMOs in the future.	ERSWG 14	Chair, Secretariat
Investigate the use of the new 5*5 by quarter to be provided for the modified ERSWG Data Exchange, for analyses of issues relating to seabird bycatch.	ERSWG 14	New Zealand
Update the seabird Ecological Risk Assessment, together with updated identification of high-risk areas.	ERSWG 14	New Zealand lead with collaboration from Members
Develop a revised draft list of strategic actions under each of the specific objectives of the Multi-year seabird strategy.	ERSWG 14	Australia with collaboration from all Members

Agenda Item 8. Other business

176. The Secretariat advised the meeting that a Joint tuna RFMO Bycatch Working Group Meeting will be held from 16-18 December 2019. The meeting's main focus will be on elasmobranchs, but other matters can be considered. There is funding for 2 CCSBT delegates to attend the meeting. The Secretariat sought two volunteers for the Steering Committee of the meeting and two CCSBT representatives to attend the meeting (one scientist and one manager or Secretariat). No nominations were proposed so they are to be decided intersessionally.
177. The Secretariat also advised the meeting of a communication it received that morning regarding a workshop on "Options to Operationalize the Ecosystem Approach to Fisheries in tuna RFMOs" to be held from 17-19 September 2019 at the FAO headquarters in Rome. Two people are required to attend, one at Commissioner level and the other a scientist. The Secretariat will seek nominations for representatives at this meeting by Circular.
178. The Secretariat described the CCSBTs involvement in the ABNJ program. The CCSBT is a partner and is on the periphery of the program, with not many developing State Members. The CCSBT has been involved with a number of workshops associated with the program, such as the Tuna Compliance Network (TCN), and Management Strategy Evaluation, and has been involved with the Consolidated List of Authorised Vessels (CLAV). The first CCSBT initiated project is in progress, with Trygg Mat Tracking using AIS data to look at compliance risks in the SBT fishery, and a new project with BirdLife is being developed for possible submission to ABNJ2. The CCSBT is likely to be a partner to ABNJ2 in the future.
179. The Secretariat presented paper CCSBT-ERS/1905/08, which provides a draft revision to Annex I of the CCSBT's "Resolution to Align CCSBT's Ecologically Related Species measures with those of other tuna RFMOs" and a proposed Report by the Secretariat to the Compliance Committee in accordance with paragraph 7 of the Resolution.
180. The meeting agreed to the proposed changes to the Resolution.
181. It was noted that the proposed summary report for submission to the CC does not summarise the implementation of ERS Measures as stated in paragraph 7, and that the Secretariat could look at similar reports provided to other tuna RFMOs.
182. The meeting decided to keep the report format as proposed and seek clarification from the CC.
183. The meeting agreed that the Secretariat would provide the Report of ERSWG13 to other tuna RFMOs when it is made public. It was also agreed to develop a template for summarising the key points of the report that could be provided to other tuna RFMOs in the future.

Agenda Item 9. Referral of ERS matters for consideration by CCSBT subsidiary bodies

9.1 The Compliance Committee

184. The Secretariat presented paper CCSBT-ERS/1905/07 containing information and correspondence from the CC. The paper contained three elements for discussion, these being:
- Information provided in Members' annual reports to the CC on the Types of Information Collected on Bycatch Mitigation Measures;
 - An update to the CCSBT's Resolution on Minimum Standards for Inspection in Port to include information on compliance with Seabird Bycatch Mitigation Measures for longline vessels; and
 - A Proposal from HSI and BirdLife to the CC to insert an additional ERS subsection on monitoring usage of bycatch mitigation measures into the annual CC/EC reporting template.
185. On the first dot-point, the Secretariat's paper included a tabular summary on the types of information collected by Members and commented that the level of coverage of compliance monitoring was generally not well specified.
186. On the second dot-point, the Secretariat noted that based on inspection reports submitted to date, it expected little additional seabird mitigation measures information to be collected from the revised Annex B of the Port Inspection Resolution. In addition, the Secretariat noted that the information that had been received to date had not been recorded on CCSBT's Port inspection form but rather on ICCAT or IOTC inspection forms.
187. On the third dot point, HSI directed Members' attention to the conservation crisis facing albatrosses and petrels which provided the rationale for the proposal put forward. HSI noted that discussions already held during this meeting may affect the details of the proposal it had put forward.
188. Members discussed the HSI/BirdLife proposal as presented noting that:
- There may be concerns about reporting data collected by scientific observers to the CC;
 - Hook pods should be incorporated into the tables;
 - The tables didn't allow for reporting in cases where all three mitigation measures were used;
 - The tables could perhaps be generated by the Secretariat using data already collected during the ERS Data Exchange process; and
 - Japan had already advised it could not provide the data for Table B of the proposal.
189. Based on these discussions, Members did not recommend including the newly proposed subsection into the annual CC/EC reporting template.
190. The Secretariat tabled paper CCSBT-ERS/1905/BGD 01 (Review of the CCSBT ERS Recommendation) for Members' information.

9.2 Other CCSBT subsidiary bodies

191. There were no ERS matters referred to CCSBT subsidiary bodies for their consideration.

Agenda Item 10. Recommendations and advice to the Extended Commission

192. The ERSWG recommends that the EC adopt:

1. The revised ERSWG Data Exchange template shown at **Attachment 4**. The changes include:
 - Increasing the spatial and temporal resolution of the data from CCSBT Statistical Area and year to 5-degree resolution and quarter;
 - Removing the calculated fields of capture rate, mortality rate and estimated total number of mortalities as the Secretariat can perform these calculations;
 - Remove the “Captures (number)” field as this can be calculated from the “Fate (numbers) fields;
 - Adding “Human Observer/EM” column to specify the data source; and
 - Adding three columns under “Proportion of observed effort with specific mitigation measures” so that Members can specify the proportion of single measures used.
2. The revised ERSWG Annual Report template shown at **Attachment 5**. The changes include:
 - Changes to reflect changes to the EDE template; and
 - The % observer coverage column would be retained for ease of reference.
3. The overall objective and five specific objectives of the CCSBT Multi-year Seabird Strategy shown at **Attachment 7**.
4. The revised “Resolution to Align CCSBT’s Ecologically Related Species measures with those of other tuna RFMOs” as provided in paper CCSBT-ERS/1905/08 (Rev.1). This Resolution was modified to reflect changes to ERS measures of IOTC, WCPFC and ICCAT in accordance with paragraph 5 of the Resolution.

193. The ERSWG wishes to advise the EC of the following matters:

5. The ERSWG has agreed on the method for evaluating risk to seabirds from longline fishing for SBT (CCSBT-ERS/1905/17). This risk assessment, applied to data from 2016, found that for nine of the 25 albatross and petrel species the estimated annual incidental bycatch in surface longline fisheries exceeded the population productivity.
6. The data for 2017 provided to the ERSWG shows a lower total numbers of reported seabird mortalities but the ERSWG noted that this was most likely to have resulted from inadequate and unrepresentative sampling and not from

improved mitigation. Therefore 2017 data should be treated with caution. 2018 data may require the same caution to be applied.

7. The ERSWG noted the potential for EM to improve the reporting of the number of ERS interactions, but that EM may not be applicable to all fisheries targeting SBT at present.
8. The ERSWG did not seek to amend its previous advice that the level of interaction between seabirds and SBT fisheries is still a significant level of concern.
9. The ERSWG agreed that the high-risk areas analysis should be incorporated into the southern hemisphere risk assessment analysis. The ERSWG has tabulated the options for potential high-risk areas and their trade-offs in **Attachment 6**.
10. The ERSWG noted that ACAP has confirmed that the combined use of weighted branch lines, bird scaring lines and night setting remains the best practice approach to mitigate seabird bycatch in pelagic longline fisheries. In addition, ACAP has since 2016 also endorsed the inclusion of a hook-shielding device (meeting prescribed performance requirements) as a standalone measure to replace the three combined recommended measures.
11. That the ERSWG will intersessionally develop a draft list of strategic actions under each of the specific objectives of the Multi-year Seabird Strategy.
12. That data provided by Members indicated that 10 of the 12 shark species considered CCSBT relevant by CMS Sharks are present in the SBT fishery and additional species could also be considered to be CCSBT relevant. The three mostly commonly caught species (blue shark, porbeagle and shortfin mako) are already required to be reported as part of the EDE. There was no agreement to expand the list of shark species in the EDE reporting template.
13. The ERSWG examined the Southern hemisphere porbeagle shark status assessment (undertaken under the Common Oceans (ABNJ) Tuna Project) provided at paper CCSBT-ERS/1905/10). The ERSWG considered that the assessment represents the best available science on the status of the stock. For all assessment areas combined, and over all years and Maximum Impact Sustainability Thresholds (MIST) assessed, there was at most an 8% probability that fishing mortality is exceeding the MIST. The MIST is a kind of limit reference point which indicates a population's ability to withstand fishing pressure. The greatest contributions to fishing mortality were made by the pelagic longline fisheries, with the largest contribution (70-90%) from fleets targeting southern bluefin tuna or a mixture of southern bluefin and albacore tuna.
14. The ERSWG confirmed its previously agreed advice for all shark species caught in SBT fisheries, that there were currently no specific concerns about shark bycatch that warranted additional mitigation requirements.

Agenda Item 11. Conclusion

11.1 Adoption of meeting report

194. The report was adopted.

11.2. Recommendation on timing of the next meeting

195. The ERSWG considered that February/March was the best time of year to hold an ERSWG meeting due to commitments with other CCSBT and RFMO meetings later in the year. It was also noted that any time after May would not be possible for some Members. The ERSWG also noted that it would be useful to hold meetings many months before or after the annual ERS Data Exchange (which occurs on 31 July) to enable the Secretariat to utilise these data to provide reports for Members.

11.3. Close of meeting

196. The meeting closed at 2:25 pm, 31 May 2019.

List of Attachments

Attachment

1. List of Participants
2. Agenda
3. List of Documents
4. Revised ERSWG Data Exchange
5. Revision to Table 1 of the ERSWG National Report Template
6. Trade-offs in the definition of high-risk areas
7. Seabird Strategy (Overall and Specific Objectives)

List of Participants
The 13th Meeting of Ecologically Related Species Working Group

First name	Last name	Title	Position	Organisation	Postal address	Tel	Fax	Email
CHAIR								
Alexander	MORISON	Mr			Australia			morison.aqsci@gmail.com
MEMBERS								
AUSTRALIA								
Bertie	HENNECKE	Dr	Assistant Secretary	Department of Agriculture and Water Resources	GPO Box 858, Canberra ACT 2601 Australia	61 2 6272 4277		bertie.hennecke@agriculture.gov.au
Heather	PATTERSON	Dr	Scientist	Department of Agriculture and Water Resources	GPO Box 858, Canberra ACT 2601 Australia	61 2 6272 4612		heather.patterson@agriculture.gov.au
Tim	EMERY	Dr	Scientist	Department of Agriculture and Water Resources	GPO Box 858, Canberra ACT 2601 Australia	61 2 6272 5169		Timothy.Emery@agriculture.gov.au
Ashley	WILLIAMS	Dr	Senior Scientist	Department of Agriculture and Water Resources	GPO Box 858, Canberra ACT 2601 Australia	61 2 6272 3028		Ashley.Williams@agriculture.gov.au
Mahdi	PARSA	Dr	Scientist	Department of Agriculture and Water Resources	GPO Box 858, Canberra ACT 2601 Australia	61 2 6272 5383		Mahdi.Parsa@agriculture.gov.au
Matt	DANIEL	Mr	Southern Bluefin Tuna Fishery Manager	Australian Fisheries Management Authority	GPO Box 7051, Canberra, ACT 2601, Australia	61 2 6225 5338		Matthew.Daniel@afma.gov.au
Neil	HUGHES	Mr	Assistant Director	Department of Agriculture and Water Resources	GPO Box 858, Canberra ACT 2601 Australia	61 2 6271 6306		Neil.Hughes@agriculture.gov.au
Steve	AULD	Mr	Director	Department of Agriculture and Water Resources	GPO Box 858, Canberra ACT 2601 Australia	61 2 6272 3366		Steve.Auld@agriculture.gov.au

First name	Last name	Title	Position	Organisation	Postal address	Tel	Fax	Email
Jonathon	BARRINGTON	Mr	Senior Policy Advisor	Department of the Environment and Energy, Australian Antarctic Division	203 Channel Highway, Kingston TAS 7053 Australia	61 3 6232 3286		Jonathon.Barrington@aad.gov.au
Brian	JEFFRIESS	Mr	Chief Executive Officer	Australian SBT Industry Association	PO Box 416, Fullarton SA 5063, Australia	0419 840 299		austuna@bigpond.com
Patrick	SACHS	Mr	Assistant Director	Department of Agriculture and Water Resources	GPO Box 858, Canberra ACT 2601 Australia	61 2 62723 933		Patrick.sachs@agriculture.gov.au
Emma	COHEN	Ms	Policy Officer	Department of Agriculture and Water Resources	GPO Box 858, Canberra ACT 2601 Australia	61 2 6271 6570		Emma.Cohen@agriculture.gov.au

FISHING ENTITY OF TAIWAN

Ting-Chun	KUO	Dr.	Assistant Professor	National Taiwan Ocean University	2 Pei-Ning Road, Keelung 20224, Taiwan	886 2 2462 2192	886 2 2463 3986	tckuo@mail.ntou.edu.tw
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JAPAN

Hiroshi	MINAMI	Dr	Department Director	National Research Institute of Far Seas Fisheries	5-7-1 Orido, Shimizu, Shizuoka 424-8633, Japan	81 54 336 6000	81 53 335 9642	hminami@affrc.go.jp
Tomoyuki	ITOH	Dr	Group Chief	National Research Institute of Far Seas Fisheries	5-7-1 Orido, Shimizu, Shizuoka 424-8633, Japan	81 54 336 6000	81 53 335 9642	itou@fra.affrc.go.jp
Daisuke	OCHI	Dr	Senior Scientist	National Research Institute of Far Seas Fisheries	5-7-1 Orido, Shimizu, Shizuoka 424-8633, Japan	81 54 336 6000	81 53 335 9642	otthii@affrc.go.jp
Sachiko	TSUJI	Dr	Technical Advisor	National Research Institute of Far Seas Fisheries	5-7-1 Orido, Shimizu, Shizuoka 424-8633, Japan	81 54 336 6000	81 53 335 9642	sachiko27tsuji@gmail.com

First name	Last name	Title	Position	Organisation	Postal address	Tel	Fax	Email
Kei	OKAMOTO	Dr	Scientist	National Research Institute of Far Seas Fisheries	5-7-1 Orido, Shimizu, Shizuoka 424-8633, Japan	81 54 336 6000	81 53 335 9642	keiokamoto@affrc.go.jp
Ryo	OMORI	Mr	Assistant Director	Fisheries Agency	1-2-1 Kasumigaseki, Chiyoda-ku, Tokyo 100-8907, Japan	81 3 6744 2364	81 3 3591 5824	ryo_omori330@maff.go.jp
Yuji	UOZUMI	Dr	Advisor	Japan Tuna Fisheries Cooperative Association	31-1, Eitai 2 Chome, Koto-ku, Tokyo 135-0034, Japan	81 3 5646 2382	81 3 5646 2652	uozumi@japantuna.or.jp
Nozomu	MIURA	Mr	Assistant Director	Japan Tuna Fisheries Cooperative Association	31-1, Eitai 2 Chome, Koto-ku, Tokyo 135-0034, Japan	81 3 5646 2382	81 3 5646 2652	miura@japantuna.or.jp

NEW ZEALAND

Richard	FORD	Dr	Science Manager	Fisheries New Zealand	PO Box 2526, Wellington 6011	0064 819 4664		richard.ford@mpi.govt.nz
Joanna	LAMBIE	Ms	Fisheries Analyst	Fisheries New Zealand	PO Box 2526, Wellington 6011	0064 894 0131		jo.lambie@mpi.govt.nz
William	GIBSON	Mr	Fisheries Scientist	Fisheries New Zealand	PO Box 2526, Wellington 6011	0064 819 4759		William.Gibson@mpi.govt.nz
Ed	ABRAHAM	Dr	Researcher	Dragonfly Data Science	PO Box 27535, Wellington 6141	0064 21 989 454		edward@dragonfly.co.nz

REPUBLIC OF KOREA

Du Hae	AN	Dr.	Director	National Institute of Fisheries Science	216, Gijanghaean-ro, Gijang-eup, Gijang-gun, Busan, 46083 Korea	82 51 720 2310	82 51 720 2337	dhan119@korea.kr
Sung Il	LEE	Dr.	Researcher	National Institute of Fisheries Science	216, Gijanghaean-ro, Gijang-eup, Gijang-gun, Busan, 46083 Korea	82 51 720 2331	82 51 720 2337	k.sungillee@gmail.com

First name	Last name	Title	Position	Organisation	Postal address	Tel	Fax	Email
OBSERVERS								
AGREEMENT ON THE CONSERVATION OF ALBATROSSES AND PETRELS								
Christine	BOGLE	Ms.	Executive Secretary	Agreement on the Conservation of Albatrosses and Petrels (ACAP)	ACAP Secretariat, 119 Macquarie St, Hobart TAS 7000, Australia	61 4 1913 5806 or 61 3 6165 6674		christine.bogle@acap.aq
BIRDLIFE INTERNATIONAL								
Yasuko	SUZUKI	Dr.	Marine Programme Officer	BirdLife International	Unizo Kakigara-cho Kitajima Bldg. 1F, 1-13-1 Nihonbashi Kakigara-cho, Chuo-ku, Tokyo 103-0014 Japan	81 3 6206 2941	81 3 6206 2942	yasuko.suzuki@birdlife.org
FOOD AND AGRICULTURE ORGANISATION OF THE UNITED NATIONS								
Shelley	CLARKE	Dr	Technical Coordinator-Sharks and Bycatch Common Oceans (ABNJ) Tuna Project	Food and Agriculture Organization of the United Nations (FAO)	Viale delle Terme di Caracalla 00153 Rome, Italy	39 06 57051 x5024 8		Shelley.Clarke@fao.org
HUMANE SOCIETY INTERNATIONAL								
Alexia	WELLBELOVE	Ms	Senior Program Manager	Humane Society International	PO Box 439 Avalon NSW 2107 Australia	61 2 9973 1728		alexia@hsi.org.au
TRAFFIC								
Glenn	SANT	Mr	Fisheries Trade Programme Leader	TRAFFIC	ANCORS, University of Wollongong, Wollongong, NSW, 2522 Australia	61 2 4221 3221		glenn.sant@traffic.org
INTERPRETERS								
Kumi	KOIKE	Ms						
Yoko	YAMAKAGE	Ms						
Kaori	ASAKI	Ms						
CCSBT SECRETARIAT								
Robert	KENNEDY	Mr	Executive Secretary					rkennedy@ccsbt.org
Akira	SOMA	Mr	Deputy Executive Secretary					asoma@ccsbt.org
Susie	IBALL	Ms	Compliance Manager		PO Box 37, Deakin West ACT 2600 AUSTRALIA	61 2 6282 8396	61 2 6100 9461	siball@ccsbt.org
Colin	MILLAR	Mr	Database Manager					CMillar@ccsbt.org
Misato	HORII	Ms	Administrati on officer					mhorii@ccsbt.org

Commission for the Conservation of
Southern Bluefin Tuna



みなみまぐろ保存委員会

Agenda
Thirteenth meeting of the Ecologically Related Species Working Group
28 – 31 May 2019
Canberra, Australia

1. Opening
 - 1.1 Adoption of the Agenda
 - 1.2 Adoption of Document List
 - 1.3 Appointment of Rapporteurs
2. Annual reports
 - 2.1 Members
 - 2.2 Secretariat report on the ERSWG Data Exchange
3. Reports of meetings and/or outcomes of other organisations relevant to the ERS Working Group
4. Review of progress with the work program from ERSWG 12
5. Information and advice on ERS
 - 5.1 Seabirds
 - 5.1.1 Information on stock status
 - 5.1.2 Estimates of ERS mortality and associated uncertainty
 - 5.1.3 Ecological risk assessment
 - 5.1.4 Assessment and advice on mitigation measures
 - 5.1.5 Seabird species identification
 - 5.1.6 Multi-year seabird strategy
 - 5.2 Sharks
 - 5.2.1 Shark species of relevance to the CCSBT
 - 5.2.2 Information on stock status
 - 5.2.3 Estimates of ERS mortality and associated uncertainty
 - 5.2.4 Threat assessment
 - 5.3 Other ERS
 - 5.4 Trophic interactions
6. Education and public relations activities
7. Future work program

8. Other business
9. Referral of ERS matters for consideration by CCSBT subsidiary bodies
 - 9.1 The Compliance Committee
 - 9.2 Other CCSBT subsidiary bodies
10. Recommendations and advice to the Extended Commission
11. Conclusion
 - 11.1. Adoption of meeting report
 - 11.2. Recommendation on timing of the next meeting
 - 11.3. Close of meeting

List of Documents
Twelfth Meeting of the Ecologically Related Species Working Group

(CCSBT-ERS/1905/)

1. Provisional Agenda
2. List of Participants
3. List of Documents
4. (Secretariat) Summaries from the 2018 ERSWG Data Exchange (Rev.3) (ERSWG Agenda Item 2.2)
5. (Secretariat) Progress with the SMMTG Recommendations (Rev.1) (ERSWG Agenda Item 5.1)
6. (Secretariat) Shark Species of Relevance to the CCSBT (ERSWG Agenda Item 5.2.1)
7. (Secretariat) Information and Correspondence from the Compliance Committee (ERSWG Agenda Item 7)
8. (Secretariat) Update to the CCSBT's "Resolution to Align CCSBT's Ecologically Related Species measures with those of other tuna RFMOs" (ERSWG Agenda Item 9)
9. (BirdLife International and the Secretariat) Draft proposal to enhance education on and the implementation of ERS measures (ERSWG Agenda Item 6)
10. (FAO) Southern Hemisphere porbeagle shark (*Lamna nasus*) stock status assessment (Rev.1) (ERSWG Agenda Item 5.2.2)
11. (Australia) An empirical Bayesian hierarchical modelling of fleet and vessel-level bycatch rates in commercial fisheries: a prospective tool for managing risk through targeted intervention (ERSWG Agenda Item 5.1.2)
12. (Australia) Developing a multi-year seabird strategy (ERSWG Agenda Item 5.1.6)
13. (Australia) Measuring congruence between electronic monitoring and logbook data in Australian Commonwealth longline and gillnet fisheries (ERSWG Agenda Item 5.3)
14. (Australia) Changes in logbook reporting by commercial fishers following the implementation of electronic monitoring in Australian Commonwealth fisheries (ERSWG Agenda Item 5.3)
15. (New Zealand) Analysis to identify potential high-risk areas (using method 3A) (ERSWG Agenda Item 5.1.3)
16. (New Zealand) Proposed definition of high-risk areas (ERSWG Agenda Item 5.1.3)

17. (New Zealand) Assessment of the risk of surface longline fisheries in the southern hemisphere to albatrosses and petrels, for 2016 (ERSWG Agenda Item 5.1.3)
18. (New Zealand) Analysis of differences in bycatch rates between fleets (ERSWG Agenda Item 5.1.4)
19. (Japan) Report of Japanese scientific observer activities for southern bluefin tuna fishery in 2016; Revise in 2019 (ERSWG Agenda Item 2.1)
20. (Japan) Report of Japanese scientific observer activities for southern bluefin tuna fishery in 2017; Revise in 2019 (ERSWG Agenda Item 2.1)
21. (Japan) Distribution, life history and CPUE of butterfly kingfish *Gasterochisma melampus*, a large pelagic ecologically related species of southern bluefin tuna (ERSWG Agenda item 5.3)
22. (ACAP and BirdLife International) An Update on the Status and Trends of ACAP-Listed Albatrosses and Petrels in the CCSBT Area (ERSWG Agenda Item 5.1.1)
23. (BirdLife International) Report of the Final Global Seabird Bycatch Assessment Workshop, part of the Seabird Bycatch Component of the Common Oceans ABNJ Tuna Project (ERSWG Agenda Item 5.1.2)

(CCSBT-ERS/1905/BGD)

1. (Secretariat) Review of ERS Recommendation (*Previously CCSBT-CC/1810/21 (Rev.1)*) (ERSWG Agenda Item 7)
2. (Secretariat) Summaries from the 2016 ERSWG Data Exchange (*Previously CCSBT-ERS/1703/05*) (ERSWG Agenda Item 2.2)
3. (New Zealand) Assessment of the risk of commercial surface longline fisheries in the southern hemisphere to ACAP species (*Previously CCSBT-ERS/1703/12*) (ERSWG Agenda Item 5.1.3)
4. (New Zealand) Defining “high risk areas” in southern bluefin tuna fisheries (*Previously CCSBT-ERS/1703/13*) (ERSWG Agenda Item 5.1.3) (ERSWG Agenda Item 5.1.3)

(CCSBT-ERS/1905/Annual Report-)

Australia	Australian country report: Ecologically related species in the Australian Southern Bluefin Tuna Fishery 2015 - 16 to 2016 - 17
Fishing Entity of Taiwan	National Report of Taiwan: Ecologically Related Species in the Taiwanese Southern Bluefin Tuna Fishery 2016-2017 (Rev.1)

Indonesia	2019 Annual Report to 13 th the Ecologically Related Species Working Group (ERSWG) of CCSBT
Japan	National report of Japan: overview of researches on ecologically related species in Japanese SBT longline fishery, 2019
New Zealand	New Zealand Report to the Ecologically Related Species Working Group (Rev.1)
Republic of Korea	2019 Annual Report to the Ecologically Related Species Working Group (ERSWG)
South Africa	South Africa's Annual Report to the Ecologically Related Species Working Group (ERSWG) of the Commission for the Conservation of Southern Bluefin Tuna, 2018

(CCSBT- ERS/1905/Info)

1. (New Zealand) Hookpod-mini: a smaller potential solution to mitigate seabird bycatch in pelagic longline fisheries (ERSWG Agenda Item 5.1.4)
2. (Japan) Spawning area and season of butterfly kingfish (*Gasterochisma melampus*), a large scombrid adapted to cooler temperate southern water (ERSWG Agenda Item 5.3)
3. (Japan) Biological aspects of the butterfly kingfish *Gasterochisma melampus*: distribution, total catch, size composition and CPUE (ERSWG Agenda Item 5.3)
4. (Taiwan) Incidental catch of seabirds by Taiwanese longline fleets in the Southern Oceans between 2010-2018 (Rev.1) (ERSWG Agenda Item 5.1.1)
5. (ACAP) Current ACAP Advice for Reducing the Impact of Pelagic Longline Fishing Operation on Seabirds (ERSWG Agenda Item 5.1.4)
6. (BirdLife International) A comprehensive large-scale assessment of fisheries bycatch risk to threatened seabird populations (Rev.1) (ERSWG Agenda Item 5.1.3)
7. (BirdLife International) Mapping the global distribution of seabird populations: a framework for integrating biologging, demographic and phenological datasets (ERSWG Agenda Item 5.1.3)
8. (BirdLife International) Observer coverage for monitoring bycatch of seabirds and other ETP species in pelagic longline fisheries (ERSWG Agenda Item 5.1.3)
9. (BirdLife International) At-sea distribution and fisheries bycatch risk of juvenile grey-headed albatrosses from South Georgia (Islas Georgias del Sur) (Rev.1) (ERSWG Agenda Item 5.1.3)

10. (Korea) Spatio-temporal distributions of seabirds bycaught by Korean longline fisheries (ERSWG Agenda Item 2.1)
11. (TRAFFIC) Rapid Assessment Toolkit for Sharks and Rays (ERSWG Agenda Item 3)
12. (Secretariat) CITES CoP18 Proposal 42 (ERSWG Agenda Item 5.2.2)
13. (Secretariat) EXTRACT of the Assessment of CITES Proposal 42 from the "Report of the Sixth FAO Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially-Exploited Aquatic Species" (ERSWG Agenda Item 5.2.2)
14. (Secretariat) EXTRACT of the CITES "Secretariat's assessment of the proposals to amend Appendices I and II" relating to Proposal 42 for CITES CoP18 (ERSWG Agenda Item 5.2.2)
15. (TRAFFIC) IUCN/TRAFFIC Analyses of Proposals to CoP18 (ERSWG Agenda Item 5.2.2)
16. (BirdLife International) BirdLife International Report to the Thirteenth meeting of the Ecologically Related Species Working Group (ERSWG13) (ERSWG Agenda Item 3)
17. (Humane Society International) HSI Report to the Thirteenth meeting of the Ecologically Related Species Working Group (ERSWG Agenda Item 3)

(CCSBT-ERS/1905/Rep)

1. Report of the Twenty Fifth Annual Meeting of the Commission (October 2018)
2. Report of the Thirteenth Meeting of the Compliance Committee (October 2018)
3. Report of the Fifth Meeting of the Strategy and Fisheries Management Working Group (March 2018)
4. Report of the Twenty Fourth Annual Meeting of the Commission (October 2017)
5. Report of the Twelfth Meeting of the Compliance Committee (October 2017)
6. Report of the Twenty Second Meeting of the Scientific Committee (August - September 2017)
7. Report of the Twelfth Meeting of the Ecologically Related Species Working Group (March 2017)
8. Report of the Eleventh Meeting of the Ecologically Related Species Working Group (August 2015)
9. Report of the Effectiveness of Seabird Mitigation Measures Technical Group (November 2014)

ERSWG Data Exchange

(Adopted at the Nineteenth Annual Meeting of the Commission, 1-4 October 2012, revised at the Eleventh Meeting of the ERSWG, 3-6 March 2015, updated as agreed at the Twelfth Meeting of the ERSWG, 21-24 March 2017, revised to match the revised data confidentiality risk classifications agreed at CCSBT 24, and revised at the Thirteenth Meeting of the ERSWG, 28-31 May 2019)

Introduction

The ERSWG Data Exchange is divided into three sections:

1. Data to be provided;
2. Frequency & timeframe for data provision; and
3. Confidentiality.

The Data Exchange described here is intended for the sharing of information for “general” ERSWG purposes. It is expected that the ERSWG will conduct assessments from time to time that will require more detailed information and CCSBT Members have expressed their willingness, in principle, to share more detailed information on a case by case basis with those who have been tasked with leading such assessments.

1. Data to be provided

ERSWG 9 made three important recommendations to the Extended Commission that form the basis of this data exchange proposal. These are that:

- For the purpose of the ERS Data Exchange, the SBT fishery is defined as all fishing effort by authorised vessels¹ for shots/sets where SBT was either targeted or caught². Data for the full SBT fishery as defined here is to be provided as part of this data exchange. Data should not be provided for fishing that does not match this definition.
- Data are to be provided by year, quarter, and 5x5 degree square..
- The specific data items to be provided are:
 - Country/Fishing Entity (*suggest using 2 digit country code, e.g. "JP"*)
 - Calendar year
 - Quarter
 - Species (*or group*³)
 - Fishery (*defined by a combination of gear and fleet – see Attachment A*)
 - Human observer / Electronic monitoring
 - Stratum (*5x5 degree squares*⁴)
 - Total effort⁵
 - Total observed effort⁵
 - Fate of observed captures (*number*), separated into 3 categories:
 - Retained (dead)
 - Discarded (dead)
 - Released (live)
 - Other⁶
 - Proportion of observed effort with specific mitigation measures

For the actual exchange of data, the above data items will be provided in two separate tables as outlined in **Attachment A**. This style of data provision would prevent double counting and possible confusion in relation to the effort information.

¹ Authorised vessels are vessels on the CCSBT authorised list of vessels during the relevant calendar year.

² For clarification, it is intended that the only information that would be included in the exchange is information from those shots that targeted **or** caught SBT. Hence, if a bycatch vessel only caught 1 SBT for the year, it would only be data from that one SBT shot that would be included in the exchanged information.

³ Information should be provided by species (including the scientific name) wherever practical. For species where species specific reporting is not practical (e.g. due to insufficient data, or the high level of work involved), then the level of taxonomic reporting should be at least to the level specified in Table 3. The ideal way to provide species information would be to use the 3 alpha FAO Species Code. If this is not possible, provide a code for the species and provide a separate lookup table that gives the species code, scientific and common names, family name etc.

⁴ Provide top left coordinates of 5x5 degree square. Use integer format with a minus sign for south latitudes and west longitudes, e.g. -120, -35.

⁵ For longline provide number of hooks, for purse seine provide number of sets.

⁶ All other captures not included in the columns for Retained (dead), Discarded (dead), and Released (live), e.g. released with undetermined life status.

To be consistent with standard practise of the Extended Scientific Committee (ESC):

- Data will be provided for the most recently completed calendar year (e.g. the 2018 data exchange would provide data for the 2017 calendar year); and
- The data exchange will include any updates for the previous calendar year (i.e. the 2018 data exchange would also include revised data for 2016).

For the very first exchange of data:

- Data for 2010 and 2011 will be provided by 30 April 2013 for all species⁷; and
- Data for 2012 will be provided by 31 July 2013.

For an initial period after the first data exchange (possibly 3 years, but still to be determined), Members will work towards improving the quality of their data and they will be able to revise any submitted data with improved information during this period. After this initial period of data improvement, changes to past data should be accompanied by an explanation of the changes.

2. Frequency & timeframe for data provision

Consistent with standard practise of the Extended Scientific Committee (ESC), it is proposed that:

- The ERS data exchange occurs on an annual basis, regardless of whether there is an ERSWG meeting in that year⁸.
- The required ERS data is submitted to the Secretariat by 31 July.

3. Confidentiality

The data will be treated in accordance with the “[Rules and Procedures for the Protection, Access to, and Dissemination of Data Compiled by the CCSBT](#)” and will be rated as “low risk”. This means that the data will not be publicly available but are available to Members and CNMs without specific approval and may be placed on the CCSBT Data CD and on the private area of the CCSBT web site. Under certain defined conditions these data may also be shared with other RFMOs

It is envisaged that the Secretariat would load exchanged ERS data to a special section of the private area of the web site titled “ERSWG Data Exchange” that Members and CNMs can access.

⁷ It may be useful to have a longer time-series of data, but there will almost certainly be problems in the first data submission so it makes sense to keep the initial time-series short while these problems are “ironed-out”. Discussion on whether or not a longer time-series is necessary could take place at an ERSWG meeting after the initial data submission.

⁸ For data required as part of the CCSBT Management Procedure, the ESC decided that these data should be provided every year despite these data only being required every third year. This was to ensure that the skills and knowledge required to provide the necessary data were retained and so that there would be very few problems in provision of that data when required. This has proved to be a successful strategy for the ESC that makes equally good sense for an ERS Data Exchange.

Proposed Format for Providing Data for the ERSWG Data Exchange

The information should be provided in electronic form in two separate tables (e.g. 2 MS-Excel spreadsheets) as described below. The common columns in the two tables are highlighted in yellow.

Table 1: Total fishing and observed effort per country, year, fishery and strata.

Country / Fishing Entity ⁹	Calendar Year	Quarter	Fishery		Human Observer / EM ¹⁰	Area ¹¹		Total & Observed Effort		Proportion of observed effort with specific mitigation measures										
			Gear Code ¹²	Fleet Code ¹³		Longitude	Latitude	Total Effort ⁵	Total Observed Effort ⁵	TP + NS ¹⁴	TP + WB ¹⁴	NS + WB ¹⁴	TP + WB + NS ¹⁴	TP ¹⁴	NS ¹⁴	WB ¹⁴	NIL ¹⁴	Others (add additional columns if required)		

Table 2: Observed and estimated captures/mortalities for each species, by country, year, fishery and strata.

Country / Fishing Entity ⁹	Calendar Year	Quarter	Fishery		Human Observer / EM ¹⁰	Area ¹¹		Species Code (or group code) ³	Species Scientific Name or Species Group Name	Observed Captures			
			Gear Code ¹²	Fleet Code ¹³		Longitude	Latitude			Fate (numbers)			
										Retained (dead)	Discarded (dead)	Released (live)	Other ¹⁵

⁹ Use the two digit country code (e.g. AU, EU, ID, JP, KR, NZ, TW and ZA).

¹⁰ Use codes OBS = human observer, EM = Electronic monitoring.

¹¹ Provide top left coordinates of 5x5 degree square. Use an integer format with a minus sign for south latitudes and west longitudes, e.g. -120, -35.

¹² Use the gear codes described in the CCSBT CDS Resolution (e.g. "LL" for longline, "PS" for purse seine, "TROL" for troll, etc.).

¹³ In most cases, this is just the two digit country code, followed by "D" for domestic for the domestic fleet (e.g. AUD, IDD, JPD, KR, NZD, TWD, ZAD and PHD). In some cases, the final letter is different, such as for the New Zealand Charter Fleet, which has the code "NZC". Contact the Secretariat if in doubt.

¹⁴ TP = tori poles, NS = night setting, WB = weighted branchline, NIL = no mitigation measures used.

¹⁵ All other captures not included in the columns for Retained (dead), Discarded (dead), and Released (live), e.g. released with undetermined life status.

Table 3: Minimum taxonomic level at which information should be reported in Table 2 (providing that such taxonomic detail is available)¹⁶. Information should be provided to species level where this is practical. Reporting of any of the following species and/or groups within table 2 should include an appropriate stratification of the data.

Species/Species Group	Comments
Sharks	
Blue Shark	
Shortfin Mako Shark	
Porbeagle	
Other sharks	
Turtles	For sea turtles, the number of species is small (approximately 7), so it is feasible to report data by stratum for each species.
Species specific	<i>Data should be provided separately for each species</i>
Seabirds	For seabirds, there are a large number of species and it is often difficult to separately identify species by pictures only. Reporting of seabird data by species would contain identification errors.
Large albatrosses	<i>Including: Wandering, Tristan, New Zealand, Antipodean, Southern Royal, and Northern Royal</i>
Dark coloured albatrosses	<i>Including: Sooty and Light-mantled</i>
Other albatrosses	<i>Including: Black-browed, Campbell, Grey-headed, Atlantic yellow-nosed, Indian yellow-nosed, Buller's, Shy, Salvin's, Chatham and White-capped</i>
Giant petrels	<i>Including: White-chinned petrel, Grey petrel, Flesh-footed shearwater etc.</i>
Other seabirds	<i>Including: Skua etc.</i>

¹⁶ The minimum taxonomic level will be subject to improvement (become more species specific) in future. Furthermore the ERSWG might recommend specific species to be reported based on risk assessments or based on advice it may seek from organisations with the necessary expertise.

Revision to Table 1 of the ERSWG National Report Template

Table 1: Reporting form for estimation of total mortality of ERS in CCSBT fisheries

Country _____ Year (calendar year) _____

Stratum (CCSBT Statistical Areas or finer scale)	Human Observer / EM ²	Total & Observed Effort ¹			Species ⁵	Observed Captures				Proportion of observed effort with specific mitigation measures								
		Total Effort ³	Total Observed Effort ³	Observer Coverage ⁴		Fate (numbers)				TP + NS ⁶	TP + WB ⁶	NS + WB ⁶	TP + WB + NS ⁶	TP ⁶	NS ⁶	WB ⁶	NIL	Others ⁷
						Retained (dead)	Discarded (dead)	Released (live)	Other ⁸									
TOTAL																		

¹ Values in these shaded cells will be repeated for all species within a strata.
² Use codes OBS = Human observers, EM = Electronic monitoring
³ For longline provide number of hooks, for purse seine provide number of sets.
⁴ For longline provide as a percentage of the number of hooks, for purse seine provide as a percentage of the number of shots.
⁵ Use FAO's 3 alpha species codes.
⁶ TP = tori poles, NS = night setting, WB = weighted branchline.
⁷ Add extra columns for other categories of mitigation measures, if required.
⁸ All other captures not included in the columns for Retained (dead), Discarded (dead), and Released (live), e.g. released with undetermined life status.

Attachment 6

Trade-offs in the definition of high-risk areas

For high-threshold and medium-threshold options (option 1 and 2) the table shows the percentage of risk that is within the high risk areas; the proportion of effort by CCSBT member countries, in CCSBT core areas, that is within the high-risk areas; the number of at-risk seabirds (with a mean risk higher than one) that have more aggregate mean risk within the high-risk areas than outside; a qualitative relative assessment of the robustness of the areas to changes in the distribution of either fishing or seabirds; a qualitative relative assessment of how the risk areas satisfy a precautionary approach; the potential burden on fishers resulting from any potential extra management changes within these areas; and the potential practicality of achieving changes in these areas. By way of comparison, an option is also presented that treats all surface longline fishing as high-risk.

High-risk areas	1. High threshold	2. Medium threshold	All areas
Risk within high-risk areas (%)	26%	50%	100%
CCSBT effort within high-risk areas (%)	18%	39%	100%
At-risk seabirds with more risk inside high-risk areas than outside	1	6	9*
Robustness to distribution changes	Low	Medium	High
Precautionary approach	Low	Medium	High
Potential burden	Low	Medium	High
Potential practicality	High	Medium	Low

*Amsterdam albatross, sooty albatross, Tristan albatross, Gibson's albatross, black petrel, grey-headed albatross, Buller's albatross, spectacled petrel, wandering albatross

Seabird Strategy
(Overall and Specific Objectives)

Overall objective

This strategy's overall objective is:

To reduce or eliminate seabird bycatch, such that SBT fisheries do not impose a significant adverse impact on seabirds.

Specific objectives

To achieve the above overall objective, the following specific objectives have been developed consistent with the BPTGs¹ and IPOA-S².

Objective 1: To reduce the level of impact of seabird bycatch by SBT fishing operations on seabird populations.

Objective 2: To ensure the collection of timely, reliable, representative data to support accurate regular estimations of total seabird mortality in SBT fisheries and its impact on seabird populations.

Objective 3: To develop and refine, in collaboration with industry and ACAP, practical, cost-effective and safe seabird bycatch mitigation technologies and techniques.

Objective 4: To develop and refine compliance approaches to ensure fleet-wide compliance with seabird bycatch mitigation measures required while conducting fishing for SBT.

Objective 5: To enhance education and outreach programs highlighting the importance of mitigating seabird interactions while fishing, and advocating effective implementation of mitigation measures.

¹ Best Practise Technical Guidelines - FAO 2009.

² International Plan of Action for reducing incidental catch of Seabirds - FAO 1999.