Commission for the Conservation of
Southern Bluefin Tuna

みなみまぐろ保存委員会

Report of the Eighth Meeting of the Ecologically Related Species Working Group

1 – 3 September 2009
Busan, Korea

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Agenda Item 1. Opening

1. Mr Cheol Woo Lee, the Director General of Korea's Distant Water Fisheries Bureau addressed the meeting and provided welcoming remarks.

1.1 Election of the Chair

2. Dr Dae-Yeon Moon (Korea) was confirmed as the Chair for the meeting.
3. The Chair welcomed participants, and thanked them for attendance at the meeting. He noted that ERS issues are becoming increasingly important across Tuna RFMO's and urged cooperation between Members to produce meaningful outcomes.
4. Each delegation introduced its participants. The list of meeting participants is at **Attachment 1**.

1.2 Adoption of agenda

5. A modified agenda was adopted and is at **Attachment 2**.
6. The list of documents presented to the meeting is at **Attachment 3**. The Chair noted that four National reports were submitted after the due date for the meeting. The meeting agreed to accept these reports, but reminded Members of the importance of submitting documents on time.

1.3 Appointment of Rapporteurs

7. Members agreed to assist the Secretariat in drafting the report by providing short paragraphs summarising each presentation and by providing additional rapporteuring support as required.

Agenda Item 2. Annual Reports

2.1 Members

8. National reports from all Members were either presented or tabled for questions and comments. Members responded to questions in relation to their reports
9. Indonesia was not represented at the meeting, but Members noted that its national report contained no information regarding observer coverage, or the use of tori lines or other seabird mitigation measures, although some effort occurred south of 30^{o}S . The meeting encouraged Indonesia to provide more information in their national reports where possible, in line with the reporting requirements.

10. It was noted that in a number of the national reports, there appeared to be a difficulty in identifying some individual bycatch at the species level. This has been identified as an important issue with recording of bycatch by observers. It was also noted scientific names could be used in reports to clarify the species that are referred to.

2.2 Cooperating Non-member reports

11. Cooperating Non-Members (CNMs) submitted national reports but were not present at the meeting. The Executive Secretary advised that the European Community (EC) provided its apologies and that the EC regretted that it was not able to attend.
12. The meeting noted that this was the first ERSWG meeting where reports were provided by all CNMs. The meeting welcomed this progress and the Chair thanked the CNMs for their reports.
13. The meeting also noted that the value of reports is reduced without CNMs being present to answer questions and that the CCSBT should consider approaches to encourage active participation by CNMs.
14. Members agreed that it is important to provide national reports in the format specified for ERSWG national reports, even if information is not available for certain sections. All Members and Cooperating Non-Members were requested to follow this format in the future.

Agenda Item 3. Review of Relevant International Instruments

15. The meeting formally noted that the FAO had adopted best practice technical guidelines for reducing incidental catch of seabirds in longline fisheries.
16. New Zealand commented that the guidelines provided a useful framework for the ERSWG when considering management of the incidental mortality of seabirds.

Agenda Item 4. Reports of meetings of other organisations relevant to the ERS Working Group

17. The Executive Secretary informed the meeting that the Secretariat provided invitations to ACAP, CCAMLR, ICCAT, IOTC and WCPFC to attend the ERSWG meeting and to submit relevant reports to the meeting. Both ACAP and CCAMLR accepted the invitation, and IOTC submitted the Report of the Fourth Session of the IOTC Working Party on Ecosystems and Bycatch (CCSBT-ERS/0909/Info01).
18. ACAP advised that it prepared paper CCSBT-ERS/0909/Info03 for this meeting and that most of this paper would be best discussed in agenda item 5.1.3. ACAP also noted that it had Memorandums of Understanding in place with CCAMLR, IOTC and WCPFC and that the Executive Secretaries of ACAP and CCSBT have had a preliminary discussion about an MOU for cooperation. Finally, ACAP

commented that it wished to continue to cooperate and assist with the work of CCSBT.

19. CCAMLR advised that it welcomed the invitation from CCSBT to participate as an observer at the ERSWG and that in respect of the Agenda of this meeting there are a number of CCAMLR issues of relevance to the CCSBT ERSWG, including:

    - The meeting of CCAMLR's Working Group on Incidental Mortality Associated with Fisheries (WG IMAF), which deals with all issues of seabird bycatch in the CAMLR Convention Area, noting that the reports of these meetings are available on the CCAMLR website;
    - The experience of CCAMLR in reducing bycatch of seabirds from several thousand birds to near zero in the fisheries that it manages; and
    - The understanding that while there is near-zero mortality of albatrosses in CCAMLR managed fisheries there is concern that many of these species that nest in the CAMLR Convention Area, and for which the conservation status is unfavourable, interact with CCSBT fisheries especially during the non-breeding period.

20. CCAMLR also noted that the above issues would benefit from sharing of expertise and knowledge between CCSBT and CCAMLR in aspects related to avoidance, mitigation and management of non-target catch.

Agenda Item 5. Provide information and advice on issues relating to species associated with southern bluefin tuna (SBT) (ecologically related species), with specific reference to:

5.1 Species (both fish and non-fish) which may be affected by SBT fisheries operations:

5.1.1 Synthesis of available data to provide initial estimates of total ERS mortality by year and species (or species group)

Seabirds

21. Japan presented paper CCSBT-ERS/0909/05 which provides annual estimates of incidental catch of seabirds in the Japanese southern bluefin tuna longline fishery. The 2006-2007 fishing years were updated based on data collected through the real time monitoring program (RTMP) and observer programs. Annual seabird catches were 8,746 (95% CI: 4,082-14,182) in 2006 and 3,852 (95% CI: 1,163-7,682) in 2007 respectively. The recent level of incidental catch of seabirds in RTMP has been stable around 2,000-9,000 birds/year.

22. In response to a question from Australia, Japan advised that the observed captures occurred while using tori lines.

23. Australia commented that seabird capture numbers were high, which indicated that the mitigation measures used were not effective enough.

24. Japan responded that seabird capture rates were affected by two factors which were (1) effectiveness of mitigation measures, and (2) seabird abundance. Japan further stated that research on the short tailed albatross indicates that the

abundance of short tailed albatross are increasing and that the mitigation measures are effective.

25. ACAP confirmed that although numbers of the short tailed albatross seem to be increasing and this was unlikely to be largely due to the impact of bycatch mitigation measures but more so to work on the breeding grounds. Populations of a number of southern hemisphere seabirds were still in decline. Moreover, these seabirds breed on remote, uninhabited islands and the main threat facing most of these populations was incidental mortality in fisheries.

26. New Zealand presented paper CCSBT-ERS/0909/14, which reports on the incidental capture of seabirds in vessels fishing for southern bluefin tuna in New Zealand waters during 2006/07 and 2007/08. The catch rates and total estimated capture of seabirds were estimated using ratio estimation. Effort was divided into strata based on the target species, fishing method, and fishing area. In the 2007 fishing year, 30 seabirds were observed caught, and the total estimated number of captures was 93. In the 2008 fishing year, there were 111 observed captures and 249 estimated captures.

Sharks

27. Japan presented paper CCSBT-ERS/0909/06 outlining the standardised CPUE for blue shark, porbeagle and shortfin mako shark, which are the main pelagic species in the SBT longline fishery. CPUE are calculated using the RTMP observer data from 1992 to 2007 with three mathematical models (CPUE lognormal model, CATCH negative binominal model, Delta-lognormal model) respectively. While there are some fluctuations, increasing or decreasing trends of standardized CPUE for the three species are not evident. Japan concluded that there are not significant changes of stock status for these species from 1992 to 2007.

28. Some other Members did however note that since the catch composition was mainly juvenile sharks, the series did not necessarily provide information or trends in adult shark populations.

29. There was some discussion on whether any knowledge gained from extensive work on using CPUE as an index of abundance for SBT had fed into the CPUE analysis of the three shark species. Japan informed Members that because CPUE analysis for sharks was based only on observer data, it was very different to CPUE analysis for SBT.

30. Japan presented paper CCSBT-ERS/0909/07 detailing the shark tagging program. In the RTMP observer program, 3339 sharks comprising 10 species were released with tags by the scientific observers over a period of 11 years from 1998 until 2009. More than 75% of these were blue shark, with the remainder comprising of porbeagle sharks. Twenty-five tags (18 blue sharks and 7 porbeagles) were returned. The overall ratio of recapture was 0.7 %. The longest time at liberty was 1738 days, with the longest migration of 5400 km. Tag recoveries from blue sharks indicated the large scale migration of this species. The recapture rate is very low, and is not enough to fully comprehend the migration pattern and the population structure. Thus, Japan considered it desirable to increase the number of tagged sharks.

31. New Zealand indicated it would be happy to cooperate with Japan so tags could be placed on sharks from the Japanese vessels that fish by charter in New Zealand waters.

32. Japan presented the population structure of Porbeagle (*Lamna nasus*) in the North Atlantic Ocean and SBT fishery ground as inferred from mitochondrial DNA control region sequences (CCSBT-ERS/0909/08). Genetic population structure of porbeagle in the SBT fishery ground and North Atlantic Ocean was investigated using nucleotide sequence of the mitochondrial DNA. Japan concluded that molecular data suggested that North and South populations of Atlantic Ocean are separate stocks.

33. Japan introduced paper CCSBT-ERS/0909/09, which summarises the biological knowledge gained from research activity on pelagic sharks caught in the SBT fishery ground. In the Japanese SBT observer program, data and samples have been collected by scientific observers since 1992. Through analysis of these data and samples, biological and ecological knowledge of pelagic sharks has been accumulated such as distribution, age and growth, maturity, stock status, population structure and migration pattern.

Sea Turtles

34. Japan presented the result of nest counts, hatching success, and improvement of nesting environments for leatherbacks, which have been conducted since 1999 in Indonesia (CCSBT-ERS/0909/10). Results of satellite tracking of post-nesting female leatherback turtles in 2003 were also presented. This tracking revealed that some of the tracked females move to the central tropical Pacific and the South Pacific off Australia and off New Zealand. The paper suggested that these areas were important habitats for leatherback turtles.. Careful management is necessary for the conservation of sea turtles, especially threatened species of turtles such as leatherback.

35. During discussion of the above papers, a number of general comments were made, including that:

    - It would be useful to standardise the measure of capture rate of ERS to the number of animals per 1,000 hooks;
    - It would be useful for papers and national reports to provided species specific information wherever possible; and
    - The extent of observer coverage representativeness and data quality differs between Members and was often low.

36. A small working group was convened to attempt to synthesise the ERS mortality estimates from papers submitted to the ERSWG and to produce initial global estimates of SBT related ERS mortality. The Chair of the small working group advised that the group had a robust discussion of approaches to provide total mortality estimates. However, the group was not confident of producing scaled estimates due to difficulties arising from issues including:

    - Differences between the types of analysis conducted by different Members and differences in the types of information and degree of species specific information provided;
    - Differences in the quality of observer data between fisheries and Members;

- Representativeness of observer data;
- Low observer coverage for some fisheries; and
- Limited information provided by some Members and Cooperating Non-Members.

37. Due to the difficulties in producing scaled estimates, the meeting synthesized the information from reports to the meeting to provide information on total observed (instead of scaled) seabird, shark and sea turtle interaction and mortality. This information is provided at **Attachment 4**.

5.1.2 Discussion and recommendation of analyses to be conducted in future to obtain improved estimates of ERS mortality and estimates of uncertainty

38. New Zealand highlighted that there are 2 key issues to be resolved under this agenda item. The first is to identify the problems associated with collection and provision of data on ERS. The second is to provide a recommendation on the type of risk assessment work that can be done. New Zealand noted that risk assessments have been developed for situations where there is a lack of data, and felt that an assessment could still be completed, noting any issues with the data as identified at agenda item 5.1.1.

39. Japan advised their intention to continue tagging of sharks, and requested that other Members cooperate with this program, in order to provide fishery independent information on stock status that could be used for a risk assessment.

40. New Zealand presented paper CCBST-ERS/0909/15 which described a risk assessment methodology that could be used in data deficient and data poor situations. The approach has been used for assessing the risk of interactions with seabirds in New Zealand fisheries. The method uses expert opinion applied through a simple scoring system, with thorough documentation of the rationale for scores assigned. In the absence of more detailed information, this approach represents a sound first step to assessing fisheries risk to seabirds.

41. Australia indicated that it has undertaken risk assessments for Australian government fisheries and that the process outlined by New Zealand is very effective for identifying high risk species. It noted that within these assessments, it was very important to utilise judgement by experts on performing assessments where there is a very low level of data.

42. New Zealand used the risk assessment method described in CCBST-ERS/0909/16 to assess seabird interactions with fisheries for which there was some information available. Data sources used in the assessment include seabird distributions and biological information, and data collected by government observers at sea. The risk assessments described in this paper and CCBST-ERS/0909/15 have been used within the New Zealand NPOA-Seabirds framework.

43. New Zealand indicated that it would like to coordinate with other Members to gather data that could contribute to complete a risk assessment (as outlined in agenda item 8).

44. The ERSWG noted that the priority for development of preliminary risk assessments was for seabirds and sea turtles.

45. The meeting welcomed the offer by New Zealand (as described in **Attachment 5**) to develop preliminary risk assessments for seabird and sea turtles, and to present the results to the Extended Commission and/or its subsidiary bodies as appropriate.

46. The meeting noted that there was still a lack of data for developing risk assessments of ERS, and that a key feature of the proposed methodologies presented by New Zealand was that it can be done in situations where data are poor, and also that it can be updated as more data become available.

47. It was noted that WCPFC and IOTC are already in the process of developing preliminary risk assessments, and that careful collaboration by CCSBT was necessary to avoid the duplication of this work, and to use any data available.

48. In addition, New Zealand welcomed the offer by ACAP to provide bird distribution information, noting that this information would be invaluable in the risk assessment process.

49. Japan noted that there are many methodologies that can be used to develop risk assessments and encouraged other members to present papers on methodologies and results of risk assessments to the next meeting of the ERSWG if they have information available.

5.1.3 Update on mitigation research and priorities

50. An updated table of research priorities has been provided at **Attachment 6**.

51. New Zealand presented paper CCBST-ERS/0909/17 which details a study conducted in New Zealand waters that sought to examine the efficacy of different tori line designs in pelagic longline fisheries. The design of the study required a departure from normal fishing conditions (including day setting), and consequently special permitting for the research to be undertaken. While the study provided a partial test of the protocol for data collection, a high number of captures in a short time (20 birds in 138 minutes) led to the experiment being abandoned. Captures were attributed to the bait caster locating baits outside the protection of the tori line.

52. ACAP noted that although many comparisons have been completed highlighting a reduction in seabird bycatch by the use of tori lines, it did not feel that this reduction was sufficient. ACAP considered that the current levels of bycatch of seabirds in longline fisheries are unsustainable.

53. ACAP presented paper CCSBT-ERS/0909/Info03 that summarised bycatch mitigation issues of potential relevance to CCSBT when developing research and management approaches to mitigate seabird bycatch in its fisheries. Although several seabird avoidance measures have been trialled to varying degrees in pelagic fisheries, proven and accepted seabird avoidance measures require substantial improvement. A recent review of pelagic longline mitigation noted that many of the mitigation measures currently adopted by fishers and fisheries managers have little empirical support as to their efficacy. This applies to measures such as side setting, light tori lines, bait casting machines, blue-dyed

bait and line-shooter effect on mainline tension. ACAP concluded that thorough comparative experimental assessment of many mitigation measures needs to be undertaken against Southern Ocean assemblages of diving seabirds, with research based on larger sample sizes and more transparent methodologies before many measures could be applied with any confidence.

54. Australia concurred with ACAP that the current mitigation measures aimed at reducing bycatch of seabirds do not appear to be sufficient. It believes additional mitigation measures need to be investigated to further reduce these levels of bycatch.

55. Japan presented the document (CCSBT-ERS/0909/11) to evaluate effectiveness of two different kinds of tori lines for various sized and shaped longline vessels. Firstly, observer data collected in the Southern Ocean were analyzed to examine factors affecting effectiveness of tori lines. Among the factors examined in the GLM analysis, number of albatrosses sighted during line setting and lengths of tori line had significant effects, and conventional tori line (Type-A) and light streamer tori-line (Type-B) showed similar effectiveness in terms of reducing incidental take of seabirds. Secondly, controlled experiments with a chartered commercial fishing vessel (75GRT) and a research vessel (196GRT) were conducted in the North Pacific to compare the effectiveness of the conventional and light streamer tori-lines, and the results showed that the light streamer tori-line had larger aerial coverage, smaller bait-taken rate by Laysan albatross and smaller incidental taking rate of Laysan albatross. Finally, on-site trials with about 30 small and middle-sized longline vessels were conducted to obtain feedback from fishers on effectiveness and practicality of these two types of tori lines. Japan concluded that these results indicated that both types of tori lines had satisfactory effectiveness of seabird avoidance and that the light streamer tori-line was more user-friendly on these small-sized longline vessels.

56. ACAP noted that research on the effectiveness of both light and conventionally-configured tori lines was extremely important, and thanked Japan for undertaking such research. However, based on the analysis presented in CCSBT-ERS/0909/11, ACAP was unable to fully evaluate the results. There were a number of unexplained covariates that could possibly have confounded the results e.g. was sink rate of gear used in both treatments similar; had bait type, line-weighting and time of set been standardised; what was the difference in aerial extent of streamer lines as mentioned in Japan's National Report; was offal being discharged at any time during experimental work, and was this standardised across treatments. ACAP encouraged Japan to address these issues and submit the results of this research to a peer-reviewed scientific journal, as the findings were relevant to all pelagic tuna fisheries.

57. There was some discussion on the effectiveness of different mitigation measures, particularly regarding the colour of streamers on Tori lines, and line weighting to increase the sink rates of hooks.

58. Australia provided a verbal update on a series of recent experiments on improving line sink rates using different hooks, bait, and distance of weights from hooks. The experiments were aimed at developing a workable strategy that will be readily adopted by fishers for obtaining sink rates that will reduce the incidental mortality of seabirds. Australia also advised there is a worldwide move towards methods for improved sink rates, such as line weighting, because of the

effectiveness of such methods, the negligible effort required to implement such methods, and improvements in the safety of using such methods. Because improved sink rates will have an impact on target and non-target species' CPUE, the importance of establishing good data collection practices was emphasised.

59. ACAP endorsed the statement that line weighting was an effective method of reducing seabird bycatch and encouraged Members to consider its use in their fisheries.

60. Other members noted that different mitigation measures were required for different situations, and that fishers needed to have a range of mitigation measures from which to choose and that this was reflected in Conservation Measures adopted by IOTC and WCPFC.

61. The ERSWG agreed that it was important when developing new mitigation measures, that they must be effective in reducing levels of bycatch, safe and practical to use for vessels, and should not adversely affect the catch rate of the target species to ensure adoption by industry.

62. Australia stated that with improvements in line weighting techniques, this could be a safe and efficient measure that was non disruptive to the fishing operations onboard a vessel.

63. Australia further stated that there are a number of other fisheries already using line weights, and perhaps data was already available from these fisheries that could be used to investigate the effectiveness of line weights as a mitigation measure.

64. CCAMLR offered to work intersessionally with CCSBT and provide information on its experience in developing and implementing conservation measures relating to line weighting.

5.2 Predator and prey species which may affect the condition of the SBT stock

65. Japan presented paper CCSBT-ERS/0909/12 which detailed studies of stomach contents of large pelagic species, including SBT, bigeye tuna, yellowfin tuna, albacore, butterfly tuna, swordfish and lancetfishes. Results based on more than 5000 individuals were provided and it was common that most of the wet weight compositions were Cephalopoda and Osteichthyes. Compared to SBT, prey weight compositions of Osteichthyes were larger for yellowfin tuna, butterfly tuna and swordfish, and smaller for albacore. Prey weight compositions were similar regardless of the body size of SBT. Japan emphasised the importance of investigation and cooperation among the CCSBT members to understand the feeding ecology, digestive rates and growth rates of SBT for the whole distribution area and the whole of its life history.

66. Australia indicated that there are a number of documents in the public domain relating to this issue which can be readily accessed.

67. New Zealand also collects this type of information, and indicated that it would continue to collect and analyse stomach contents in the future.

Agenda Item 6. Education and public relations activities

68. Japan presented paper CCSBT-ERS/0909/13. This paper outlined Japan's guidance, and educational activities for mitigating interactions with ecologically related species in longline fisheries. Japan has been holding seminars for fishers at key fishing ports as well as distributing free tori lines to longline vessels, to facilitate the use of tori lines and to test effectiveness of various kinds of tori lines in the commercial fishery.

69. New Zealand advised that CCBST-ERS/0909/19 describes education and awareness programmes undertaken by New Zealand in the past year. Initiatives included writing articles for fishing magazines, holding workshops with fishers on non-fish bycatch issues, distributing equipment to release tangled or hooked animals (for example marine turtles), and producing photo identification guides. Guides have been produced in a variety of languages (English, Korean, Japanese, Indonesian, Spanish, French, Russian, Polish, Ukrainian), and made available online as well as in hardcopy.

70. Australia noted that a similar summary of public relations and education activities was available in its national report.

71. It was suggested that the Secretariat should liaise with ACAP and CCAMLR in relation to educational material and taxonomic information that those organisations have, which may be of benefit in updating the CCSBT seabird pamphlet.

72. It was also suggested that the Secretariat should work with Members regarding educational and public relations materials used domestically, to gather information on possible future enhancement of mitigation and/or data collection in relation to ERS.

73. The meeting requested that the Secretariat provide cost estimates in relation to updating previous seabird and shark bycatch pamphlets to include both changes and updates in taxonomy of species. Estimates should also be provided to produce an Indonesian language version of these documents.

74. New Zealand noted it already had some seabird information available in Indonesian that might be of use to the Secretariat in its task.

75. Australia indicated that as well as an update of these pamphlets for seabirds and sharks, a new pamphlet should be created containing information on sea turtle mitigation measures. New Zealand noted that this could draw on recent work in WCPFC, as outlined in CCSBT-ERS/0909/Info09.

Agenda Item 7. Future of the ERSWG

76. Japan expressed concern at the lack of papers submitted to ERSWG 8. It noted that most Members had provided only National Reports and that Japan and New Zealand were the only Members to present papers. It was concerned that this might undermine the effective operation of the ERSWG.

77. Australia noted that along with some other Members, key information relevant to the ERSWG was contained in its National Report, and confirmed its support in the work of the ERSWG. It further noted that at future meetings of the ERSWG,

Australia would provide papers if it had information that was relevant and not contained in its National Report.

78. The ERSWG noted that along with the National Reports, the submission of documents should be encouraged, however as long as the required data was presented, this was not mandatory.

79. The ERSWG acknowledged the additional information on research by Japan and New Zealand, and encouraged the collaboration and information sharing for the ERSWG by all Members.

Agenda Item 8. Future work program

8.1 Inter-sessional work program

80. The ERSWG considered its Operational Framework which was last updated at ERSWG 6. Participants felt that it provided good guidance for the overall work priorities for the ERSWG and that it would be useful to update the operational framework. However, it was not considered necessary to update the operational framework at this meeting.

8.2 Agenda for next meeting

81. The ERSWG agreed that the provisional agenda for the next ERSWG meeting should be developed by the Executive Secretary in consultation with the Chair in accordance with the CCSBT Rules of Procedure in the same manner as was conducted for this meeting.

Agenda Item 9. Recommendations and advice to the Extended Commission

82. The following recommendations were developed by the ERSWG and are presented in no specific order of priority:

- The ERSWG welcomed New Zealand's offer to undertake a preliminary ecological risk assessment for seabirds and sea turtles and that ERSWG members may liaise with New Zealand in order to complete the analysis. Members of the ERSWG are encouraged to examine methodologies for ecological risk assessments, conduct risk assessment individually and/or collaboratively and provide their findings to the next ERSWG. The ERSWG will continue to assess the risks to shark species as appropriate in the future.
- Members and Cooperating Non-Members should include the information shown in **Attachment 4**, in future national reports to the ERSWG and including both interaction with ERS and mortalities of ERS. This information should also be provided by species (including the scientific name) wherever possible in either the national report or other reports submitted to the ERSWG.
- To obtain improved data, information on species identification should be provided to fishers and observers on an ongoing basis.

- The CCSBT should revise and reprint its seabird and shark pamphlets and develop a pamphlet on sea turtles. Versions of all three should be printed in the language of all Members.
- The ERSWG reminds Members and Cooperating Non-Members of the CCSBT's adoption of a Scientific Research Program incorporating a Scientific Observer Program. The ERSWG further recalls that the Observer Program endorsed by the CCSBT included an observer coverage target of 10% for catch and effort; and that observer coverage shall be representative[1]. The ERSWG recommends that the CCSBT ensures all members and cooperating non-members make strenuous efforts to achieve these minimum targets, improve the quality of data and meet the other requirements outlined in the Observer Program Standards.
- The Secretariat should brief Indonesia on the outcomes of the ERSWG meeting and provide copies of the report to Cooperating Non-Members together with a reminder on the requirements to provide national reports to the ERSWG in the agreed format.
- Members should assess current mitigation methods to determine their relative effectiveness, and other methods such as line weighting and tori line, where appropriate. Members should decide on which measures to assess depending on the circumstances of their particular fishery.
- In order to also improve the methods of estimating total ERS captures, the ERSWG recommends that members clearly describe the methods of estimation they have used to scale up the estimates from the observed data. The ERSWG recommends that over time these methods are improved, taking into account of internationally accepted best practice in ERS estimation and providing support to other Members in estimation if required.

Agenda Item 10. Other business

83. There was no other business.

Agenda Item 11. Conclusion

11.1 Recommendation of timing of next meeting

84. The Chair commented that ERSWG meetings are usually held every two years and that according to standard practice, the next meeting would be held in 2011.

85. The ERSWG noted that significant work will be being conducted during 2010 and 2011 by the Extended Scientific Committee (ESC) in developing the CCSBT Management Procedure and producing a revised stock assessment in 2011. It was noted that some Members felt that preparation for this ERSWG meeting was hindered by the necessity to devote effort to the SBT stock assessment being conducted this year and that greater productivity would be possible if the ERSWG meeting was not held in a stock assessment year.

[1] In accordance with the CCSBT Scientific Observer Program Standards.

86. ACAP recommended that the ERSWG consider meeting on an annual basis to better deal with the serious bycatch issues in its fisheries, noting the importance placed on ERS matters in the recent Performance Review, and the current practice of other RFMOs such as IOTC and WCPFC to conduct annual meetings of their bycatch Working Groups. Annual meetings of CCAMLR's IMAF Working Group have been widely acknowledged as a contributing factor in the success of CCAMLR in reducing seabird bycatch to negligible levels in their fisheries.

87. At the request of the meeting, the Executive Secretary advised that the Second Joint Meeting of Tuna RFMOs (Kobe2) had agreed to hold four workshops during 2010, one of which was to be on Ecologically Related Species. Kobe2 participants had expressed a desire to avoid duplication by not holding other tuna ERS meetings in the same year.

88. The meeting agreed to ask the Extended Commission to consider options for future meetings including delaying a meeting of the ERSWG until the first half of 2012. This was not a reflection of the lack of importance placed on ERS issues by Members, some of whom reiterated the need to minimise the impacts of SBT fishing on ERS, but was more an issue of logistics, timing and data availability. In the meantime and to continue the work of the ERSWG, it was recommended that progress towards the recommendations should be monitored at annual meetings of the Extended Commission and/or subsidiary bodies including the ESC.

11.2 Adoption of meeting report

89. The meeting adopted the report by consensus.

11.3 Close of meeting

90. The meeting closed at 6:15pm on 3 September 2009.

List of Attachments

Attachment

Attachment 1

List of Participants
Eighth Meeting of the Ecologically Related Species Working Group

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Attachment 2

Agenda
Eighth Meeting of the Ecologically Related Species Working Group

1. **Opening**
   - 1.1. Election of the Chair
   - 1.2. Adoption of the Agenda
   - 1.3. Appointment of Rapporteurs
2. **Annual Reports**
   - 2.1. Members
   - 2.2. Cooperating Non-Members
   - 2.3. Non-Members
   - 2.4. Summary of mitigation measures and implementation of IPOAs
3. **Review of Relevant International Instruments**
4. **Reports of meetings of other organisations relevant to the ERS Working Group**
5. **Provide information and advice on issues relating to species associated with southern bluefin tuna (SBT) (ecologically related species), with specific reference to:**
   - 5.1. Species (both fish and non-fish) which may be affected by SBT fisheries operations:
     - 5.1.1. Synthesis of available data to provide initial estimates of total ERS mortality by year and species (or species group).
     - 5.1.2. Discussion and recommendation of analyses to be conducted in future to obtain improved estimates of ERS mortality and estimates of uncertainty.
     - 5.1.3. Update on mitigation research and priorities
   - 5.2. Predator and prey species which may affect the condition of the SBT stock
6. **Education and public relations activities**
7. **Future of the ERS Working Group**
8. **Future work program**
   - 8.1. Inter-sessional work program
   - 8.2. Agenda for next meeting
9. **Recommendations and advice to the Extended Commission**
10. **Other business**
11. **Conclusion**
    - 11.1. Recommendation of timing of next meeting
    - 11.2. Adoption of meeting report
    - 11.3. Close of meeting

Attachment 3

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

(CCSBT-ERS/0909/)

1. Draft Agenda
2. Draft List of Participants
3. Draft List of Documents
4. (Secretariat) Update of RFMO Resolutions Concerning Incidental Catches of Ecologically Related Species.
5. (Japan) Estimation of incidental takes of seabirds in the Japanese Southern Bluefin Tuna longline fishery in 2006-2007 (Hiroshi Minami, Takashi Hosono, Masashi Kiyota, Yukio Takeuchi)
6. (Japan) Update of standardized CPUE for the main pelagic shark species dominated in the SBT fishery, 1992-2007 (Hiroaki Matsunaga, Kotaro Yokawa)
7. (Japan) Tag and release of the pelagic shark species in the SBT fishery, 1998-2008 (Hiroaki Matsunaga)
8. (Japan) Population structure of Porbeagle (*Lamna nasus*) in the North Atlantic Ocean and SBT fishery ground as inferred from mitochondrial DNA control region sequences (Toru Kitamura, Hiroaki Matsunaga)
9. (Japan) Japanese research activities on the biology of pelagic sharks caught in the SBT fishery ground (Hiroaki Matsunaga)
10. (Japan) Collaborative conservation and management activities by Indonesia and Japan for leatherback turtles (*Dermochelys coriacea*) in Papua, Indonesia (Hiroshi Minami, Takashi Hosono, Kosuke Yokota, Hiroyuki Suganuma, Akil Yusuf)
11. (Japan) Research on effectiveness of two different kinds of tori lines to reduce incidental take of seabirds in longline fishery (Hiroshi Minami, Kosuke Yokota, Masashi Kiyota)
12. (Japan) Japanese research activities on the feeding ecology of southern bluefin tuna and by-catch species caught by Japanese longline in 2008. (Tomoyuki Itoh)
13. (Japan) Guidance, extension and educational activities for mitigating interactions with ecologically related species in longline fishery (Toshikazu Miyamoto, Toru Kitamura, Hiroshi Minami)
14. (New Zealand) Incidental capture of seabirds and New Zealand fur seals in southern bluefin tuna fisheries in New Zealand waters in 2006-07 and 2007-08

15. (New Zealand) Level 1 Risk Assessment Methodology for incidental seabird mortality associated with New Zealand fisheries in the NZ-EEZ (Rowe, S.) 2009
16. (New Zealand) A risk assessment framework for incidental seabird mortality associated with New Zealand fisheries in the NZ-EEZ (Ben R. Sharp, Susan M Waugh, Nathan A. Walker) 2009.
17. (New Zealand) Optimizing Tori Line Designs for Pelagic Tuna Longline Fisheries. Report of work under New Zealand Ministry of Fisheries Special Permit 355 (Melvin, E.F, and Walker, N.) 2008
19. (New Zealand) Summary of education and mitigation activities in the New Zealand longline fishery.

(CCSBT- ERS/0909/BGD)

1. (New Zealand) CCAMLR process of risk assessment to minimize the effects of longline fishing mortality on seabirds. Waugh SM, Baker GB, Gales R, Croxall JP 2008. (*submitted to CCSBT 15)*
2. (New Zealand) Stages in the process of managing seabird mortality in RFMO fisheries. (Waugh, SM) 2008. (*submitted to CCSBT 15)*
3. (Japan) Draft recommendation to the Extended Commission on interactions between ecologically related species with surface fisheries including SBT farming activities

(CCSBT- ERS/0909/Info)

1. (Secretariat) Report of the Fourth Session of the IOTC Working Party on Ecosystems and Bycatch (October 2008)
2. (Japan) Review of the Japanese scientific observer program in the high sea waters in 2006 and 2007 fishing years (Hiroshi Minami, Osamu Sakai, Toshiyuki Tanabe)
3. (ACAP) Mitigation measures for pelagic longline gear: A report on the work of the seabird bycatch working group, agreement on the conservation of albatrosses and petrels
4. (New Zealand) New Zealand National Plan of Action for the Conservation and Management of Sharks. New Zealand Ministry of Fisheries, October 2008.
5. (New Zealand) Reporting forms for the recording of fisher-reported Ecologically Related Species data.
6. (New Zealand) Report of the expert consultation on best practice technical guidelines for IPOA/NPOA–Seabirds. FAO Fisheries and Aquaculture Report No. 880. 2008.

7. (New Zealand) Preliminary results of an Ecological Risk Assessment for New Zealand fisheries interactions with seabirds and marine mammals. (Waugh, S., Filippi, D., Walker , N., D. Kirby). 2008
8. (New Zealand) Optimizing tori line designs for pelagic tuna longline fisheries: South Africa. (Melvin, E.F., Heinecken, C., Guy, T.J.) 2009.
9. (New Zealand) WCPFC Guidelines for the Handling of Sea Turtles.
10. (New Zealand) Setting bycatch limits for sea turtle in the Western and Central Pacific Oceans shallow-set longline fisheries. (Brouwer, S. and Bertram, I.) (2009)
11. (New Zealand) Spatial risk indicators for seabird interactions with longline fisheries in the western and central Pacific. (David Seán Kirby, Susan Waugh, Dominique Filippi)(2009)

(CCSBT-ERS/0909/SBT Fisheries-）

Japan	National report of Japan: overview of researches on ecologically related species in Japanese SBT longline fishery, 2006-2007
Australia	Australian Country Report: Ecologically related species in the Australian Southern Bluefin Tuna Fishery
New Zealand	New Zealand Country Report: Ecologically Related Species in the New Zealand Southern Bluefin Tuna Longline Fishery
Taiwan	National Report of Taiwan for Ecologically Related Species in 2006-2008
Indonesia	Indonesia's Annual Report to ERSWG
Korea	Review of Korean SBT Fishery of 2007~2009
European Community	European Community’s Annual Report to The Ecological Related Species Working Group
South Africa	South Africa’s Annual Report to the Ecologically Related Species Working Group of the Commission for the Conservation of Southern Bluefin Tuna
Philippines	Annual Report on Ecologically Related Species Working Group

(CCSBT-- ERS/0909/Rep)

1. Report of the Fifteenth Annual Meeting of the Commission (October 2008)
2. Report of the Fourteenth Annual Meeting of the Commission (October 2007)
3. Report of the Twelfth Meeting of the Scientific Committee (September 2007)
4. Report of the Seventh Meeting of Ecologically Related Species Working Group (July 2007)

5. Report of the Thirteenth Annual Meeting of the Commission (October 2006)
6. Report of the Sixth Meeting of Ecologically Related Species Working Group (February 2006)
7. Report of the Fifth Meeting of Ecologically Related Species Working Group (February 2004)

Attachment 4

Summary of observed ERS mortality for longline and purse seine fisheries provided in papers and reports submitted to ERSWG 8

(Interactions reported in this table include the figures reported for mortalities)

2007	**NZ**[1]	**JP**[2]	**AU**[3]		**TW**[3]	**KR**[3]	**ID**	**EU**	**PH**	**ZA**
			PS	**LL**						
Total number of hooks (shots for PS)	1,939,211	24,962,000	160	8,444,000	8,067,116	6,389,219				471,712[4]
Percentage of hooks (shots) observed	42.9%	5.7%	5.6%	6.8%	14.84%	3.84%				
Total number of observed seabird interactions (mortality)	111 (111)	191 (182)	1 (0)	(7)	(16)	(Unknown)				
Total number of observed shark interactions (mortality)	13,738 (13,738)	6,358 (3,334)	0 (0)	(316)	(864)	(749)				
Total number of observed sea turtle interactions (mortality)	0 (0)	0 (0)	0 (0)	(7)	(0)	(0)				

2008 (2009 for Korea)	**NZ**[1]	**JP**[5]	**AU**[3]		**TW**[3]	**KR**[3]	**ID**	**EU**	**PH**	**ZA**
			PS	**LL**						
Total number of hooks (shots for PS)	1,107,825	*[5]	134	8,059,000	8,959,699	(Unknown[6])				337,164[4]
Percentage of hooks (shots) observed *[or total hooks observed]*	31.2%	*[5]	11.9%	11.3%	6.65%	*[311,069]*				14% / 100%[7]
Total number of observed seabird interactions (mortality)	30 (30)	*[5]	0 (0)	9 (9)	(2)	(107)				
Total number of observed shark interactions (mortality)	8,810 (8,810)	*[5]	0 (0)	630 (105)	(146)	(2,228)				
Total number of observed sea turtle interactions (mortality)	0 (0)	*[5]	0 (0)	10 (2)	(0)	(0)				

[1] Figures from CCSBT-ERS/0909/14 and CCSBT-ERS/0909/SBT Fisheries – New Zealand. The figures provided are interactions including live captures, but can be considered as mortalities for the purpose of this exercise.
[2] Figures from CCSBT-ERS/0909/Info02
[3] Figures from CCSBT-ERS/0909/SBT Fisheries – Australia/Taiwan/Korea.
[4] From catch effort data submitted to the CCSBT Secretariat. It should be noted that the catch effort data includes hooks that were not targeting SBT.
[5] Due to the timing of Japan's 2008 fishing season, it was not possible for Japan to include figures for 2008 in its paper to the ERSWG. These figures will be provided in the paper Japan produces for the next ERSWG meeting.
[6] Korea's data is for 2009 (2008 is not available) and it is too early in the year to determine the total number of hooks.
[7] 14% for the domestic fleet and 100% for the charter fleet.

Attachment 5

Options for risk assessment approaches for CCSBT ERSWG

The objective of the proposals below is to move the WG towards addressing one component of the Recommendation by CCSBT 15. See paragraph 7 of that recommendation:

> The Extended Commission and/or its subsidiary bodies as appropriate will undertake an assessment of the risk to ecologically related species posed by fishing for southern bluefin tuna.
>
> The Extended Commission will consider how these risks are mitigated by the adoption measures described at section2, and will consider whether any additional measures to mitigate risk are required

The proposed approaches would make use of existing work (e.g. analyses performed for other RFMOs, or earlier analysis done for CCSBT e.g. CCSBT-ERS/0602/Info06). NZ could lead the development of assessments, with cooperation of other members (e.g. in commenting on approaches and contributing information).

We propose the methods below as starting points for developing a risk assessment method, and seek members' views on different approaches as they relate to CCSBT 15's Recommendation. We propose approaches for seabirds and turtles initially, and would like to further discuss possible approaches to shark risk assessments. Progressing the approaches below could include considering species-specific assessments when possible. This is appropriate because risk assessments are beneficial when they provide information on species populations.

Seabirds and turtles:

<u>Approach one – data poor:</u>

- Overlap known LL and purse seine fishing effort (not just SBT) with seabird or sea turtle distribution at sea – this will highlight areas of risk based on the overlap of fishing effort and ERS distribution. In combination with information on the distribution of fishing for SBT, this would provide information on risk associated with fishing for SBT.

<u>Approach two – more data:</u>

- Use data that have been presented to ERSWG that provide additional information (e.g. bycatch of ERS) in addition to ERS and fishing effort distribution information. Additional information could include vulnerability of species to fishing, population status etc.
- Determine risk to ERS based on known fishing effort and known bycatch.
- Consider how management measures in place reduce risk.

<u>Dealing with gaps:</u>

- Use expert opinion and collaboration to identify known/likely gaps in fishing effort data.

Overlay these gaps with seabird or turtle distribution and bycatch information from nearby areas, and/or use proxies where data absent or limited.

- Derive/interpolate an estimated risk of SBT fishing in these areas.

Management and next steps

Outline options for management, addressing data gaps, problems with the assessment process and how it could be improved, etc.

Attachment 6

Updated ERSWG Research Priorities for Mitigation Measures

Mitigation Measure	Research Need(s)	Method	Country undertaking Research	Member Priorities (high, medium, low)					Opportunities for Collaboration	Past ERSWG Papers
				JP	NZ	AU	KR	TW		
Presently Used										
Night setting	▪ effect on SBT-CPUE	▪ analyse existing databases, at sea experiments,	Australia Japan	med	low[1]	low	med	med	▪ input from fishers ▪ designing experiment ▪ sharing analyses ▪ technical advice	95/13, 95/29, 95/35, 95/37, 9706/3, 9706/11, 9706/25, 9806/10, 9806/17, 9806/25 0111/34 0111/69 0602/09
	▪ effect on seabird captures	▪ analyse existing databases	Australia		med	high[2]				
	▪ effect on non-target fish	▪ analyse existing databases		low	low	low	med	med		
	▪ effect of light levels on seabird capture (e.g. moon, cloud)			med	med	low	low	med		
	▪ ways to minimise hazards to crew			med	low	low	low	low		
	▪ effect of night setting on crew efficiency			med	low	low	low	low		
Bait-casting machine	▪ effectiveness in combination with tori line	▪ at sea experiments	-	low	low	low	med	low	▪ input from fishers ▪ designing experiment ▪ technical advice ▪ sharing analyses	95/14 9806/17 9806/25 0909/17
	▪ effectiveness of different models	▪ at sea experiments	-	low	low	low	low	low		

[1] Night setting is mandatory in New Zealand tuna fisheries (unless setting during the day using line weighting) so research is not a priority but could be incorporated into other experiments that require some component of the line set during the day (i.e. behavioural responses to various tori line designs). New Zealand is willing to collaborate with other CCSBT members and non-members.

[2] In Australia night setting is mandatory in tuna fisheries operating south of latitude 30°S. Research is necessary to evaluate the need to employ night setting in areas north of 30°S

Mitigation Measure	Research Need(s)	Method	Country undertaking Research	Member Priorities (high, medium, low)					Opportunities for Collaboration	Past ERSWG Papers
				JP	NZ	AU	KR	TW		
Line weighting (mainline and snoods)	▪ optimum weighting and position of weights for different gear ▪ Effect on SBT CPUE ▪ ways to minimise hazards to crew	▪ at sea experiments ▪ gear modifications or changes to haul operation ▪ at sea experiments (safe lead trials)	Australia Japan - USA (Hawaii) NZ	med low med	med med high high	high med high	low low low	low low low	▪ input from fishers ▪ designing experiment ▪ technical advice ▪ sharing analyses	95/33 95/39 9806/12 0111/23 0111/24 0111/53 0111/62 0402/Info14 0609/09
Colouring baits	▪ identification of a short-lasting dye ▪ effectiveness in reducing seabird captures ▪ effect on SBT CPUE ▪ Assess theoretically the visibility of blue-dyed baits to seabirds	▪ trials with existing dyes ▪ at sea experiment ▪ at sea experiment ▪ Laboratory experiments	USA (Hawaii) Japan NZ Australia Australia	high high high	low med low	low med low low	low low low	low low low	▪ input from fishers ▪ designing experiment ▪ technical advice ▪ sharing analyses	0111/61 0402/08 0402/Info08 0402/Info09 0602/09 0602/11
Tori lines	▪ most effective design for different fleets	▪ at sea experiments ▪ advice from fishers	Japan New Zealand USA (Hawaii)	high	high med	high	med	med	▪ input from fishers ▪ designing experiment ▪ technical advice ▪ sharing analyses	95/13 95/29 9706/15 9706/32 9706/6 9806/9 9806/17 9806/25 0111/34 0111/60 0402/08 0402/Info16 0402/Info17 0609/09 0909/11 0909/17 0909/Info8

Mitigation Measure	Research Need(s)	Method	Country undertaking Research	Member Priorities (high, medium, low)					Opportunities for Collaboration	Past ERSWG Papers
				JP	NZ	AU	KR	TW		
Sound deterrents	▪ effectiveness in reducing seabird captures	▪ at sea experiments	Japan NZ fisher trials	low	low	low	low	low	▪ input from fishers ▪ designing experiment ▪ technical advice ▪ sharing analyses	
Side setting	▪ feasibility of altering vessel set up ▪ effectiveness in reducing seabird captures	▪ advice from vessel designers & fishers ▪ at sea experiments	USA (Hawaii) Japan	high high	low low	low low	low low	low	▪ input from fishers ▪ sharing analyses ▪ technical advice	0609/09
Fish waste management (old bait, discards, waste) and bait retention	▪ ways to store used baits on board ▪ timing and form of release of used baits & offal to minimise attraction of seabirds	▪ advice from fishers ▪ at sea trials ▪ advice from fishers ▪ at sea trials	NZ NZ	low low	low low	low low	low low	low	▪ sharing advice ▪ input from fishers ▪ technical advice on offal management technologies	
Combination of mitigation measures (CMM)	▪ effectiveness in reducing seabird captures using CMM ▪ effect on SBT CPUE of CMM ▪ underwater setting and line weighting ▪ tori line and line weighting	▪ at sea experiments ▪ at sea experiments ▪ at sea trials ▪ at sea trials	Japan Australia Japan Australia Australia	high high low low	high high med med	high low high high	low low low low	low low low low	▪ designing experiments ▪ technical advice ▪ sharing analyses ▪ input from fishers	0402/06 0602/11
Under Development										
Underwater setting	▪ development of technology ▪ best position to place baits ▪ effectiveness in reducing seabird captures	▪ advice from hydro-engineers ▪ at sea experiments ▪ at sea experiments	NZ Australia USA (Hawaii) Japan NZ NZ Australia	med low low	med med med	high low high	low low low	low low low	▪ joint funding between New Zealand and Australia ▪ input from fishers ▪ designing experiment ▪ technical advice ▪ sharing analyses	95/6 9706/13 9706/17 9706/18 9806/32 0111/13 0111/25 0111/54 0402/Info06 0402/Info18 0609/09

Mitigation Measure	Research Need(s)	Method	Country undertaking Research	Member Priorities (high, medium, low)					Opportunities for Collaboration	Past ERSWG Papers
				JP	NZ	AU	KR	TW		
Water cannon	▪ effectiveness in reducing seabird captures	▪ at sea experiment	Japan	low	low	low	low	low	▪ input from fishers ▪ designing experiment ▪ sharing analyses ▪ technical advice	0111/63 0609/09
Potential/Novel methods										
Advanced artificial baits/lures	▪ development of lure which is attractive to SBT but not to seabirds ▪ effect on SBT CPUE ▪ effectiveness in reducing seabird captures	▪ development of technology ▪ trials with farmed tuna ▪ at sea experiment ▪ at sea experiment		low low low	low low low	low low low	low low low	low low low	▪ input from fishers ▪ designing experiment ▪ sharing analyses ▪ technical advice	
Hook modifications	▪ effect of existing hook designs on capture of seabirds & seaturtles ▪ effect of existing hook design on SBT CPUE ▪ development of new hook that maximises SBT CPUE and minimises seabird capture	▪ at sea experiments ▪ at sea experiments ▪ development of hook ▪ at sea experiments		low low low	low low low	low low low	low low low	low low low	▪ input from fishers ▪ designing experiment ▪ sharing analyses ▪ technical advice	
Bait type	▪ assessment of live versus dead bait type ▪ use of thawed (versus frozen) baits	▪ at sea experiments ▪ analyse existing data sets ▪ at sea trials	Australia Korea	low	low	low	low med	low	▪ input from fishers	0402/06
Haul mitigation	▪ identify extent of haul captures and related environmental/operational factors ▪ identify possible mitigation methods ▪ test efficacy of methods in reducing captures	▪ analyse existing datasets ▪ fisher advice ▪ scientist input ▪ at sea experiments			med med med				▪ input from fishers ▪ designing experiment ▪ sharing analyses ▪ technical advice	

Mitigation Measure	Research Need(s)	Method	Country undertaking Research	Member Priorities (high, medium, low)					Opportunities for Collaboration	Past ERSWG Papers
				JP	NZ	AU	KR	TW		
Use of fish oil deterrent	▪ identify range of species deterrent is effective for ▪ develop alternative deployment methods ▪ identify effective ingredients	▪ at sea trials ▪ at sea trials ▪ chemical analyses ▪ at sea trials	New Zealand		low low low				▪ input from fishers ▪ sharing analyses ▪ technical advice ▪ collaborative trials ▪ sharing results	0609/09
Area closures (temporal and spatial)	• effectiveness in reducing seabird bycatch	• analyse existing data sets • collect and analyse comparative spatial data	Australia	low	med	high	low	low	▪ input from fishers ▪ sharing analyses	0402/06 0609/09