Commission for the Conservation of
Southern Bluefin Tuna

みなみまぐろ保存委員会

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

26-28 November 2001
Tokyo, Japan

REPORT OF THE FOURTH MEETING OF THE ECOLOGICALLY RELATED SPECIES WORKING GROUP

26 –28 November 2001
Tokyo, Japan

Agenda Item 1. Opening

1.1 Election of the Chair

1. The Deputy Executive Secretary opened the Working Group, and Dr. Kiyoshi Wakabayashi, Director-General, National Research Institute of Far Seas Fisheries (Japan), was elected as Chairman.

1.2 Adoption of the Agenda

2. The agenda as adopted is attached (**Attachment 1).**

3. The list of meeting participants is provided at **Attachment 2.**

4. The list of documents presented to the Working Group is provided at **Attachment 3.**

5. Rapporteurs were appointed to assist the Secretariat in drafting the report of the Working Group as follows: for Australia, Mr Charles Hausknecht; for Japan, Mr Masashi Kiyota; and for New Zealand, Ms Suze Baird.

Agenda Item 2. Reports

2.1 Member reports (activities undertaken since last meeting in June 1998)

6. Australia, Japan and New Zealand presented national annual reports on ecologically related species (ERS) issues according to the pro forma agreed at ERSWG3. National reports were presented to the Working Group as papers CCSBT-ERS/0111/Annual Rep-Australia, Japan, and New Zealand.

7. The ERSWG noted its disappointment that the Republic of Korea was not present at the working group and had not submitted a national annual report. The Working Group agreed to urge Korea to submit its annual report on ERS issues to the Secretariat and asked the Secretariat to follow up on this issue by writing to Korea.

2.2 Non-members reports

8. The Deputy Executive Secretary informed the Working Group that CCSBT non-members, namely Taiwan, and the Republics of South Africa and Indonesia, had not submitted any information on ERS issues to the CCSBT Secretariat prior to ERSWG 4. The Working Group agreed to urge non-members to submit information

on ERS issues to the Secretariat, and asked the Secretariat to follow up on this issue by writing to non-members.

Agenda Item 3. Review of Relevant International Instruments

9. Australia presented paper CCSBT-ERS/0111/38, which reviewed major relevant international instruments, namely the International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA-Seabirds) and the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks). Australia indicated that it believed there was a need for the CCSBT Members to cooperate at the regional/RFMO level to achieve the objectives of IPOAs. Australia further stated that the three key areas of research, training and the provision of information and promotional material were beneficial areas to consider activities that could be pursued in a cooperative and/or coordinated way at the regional level. Australia indicated that the CCSBT had a useful role to play in relation to data collection and information exchange, extension activities, and mitigation measures regarding bycatch matters. Australia also suggested that the Working Group should consider those and provide advice to the Commission on how it could cooperate in implementing the International Plan of Action (IPOA) as a regional fisheries body.

10. Japan expressed its view that it was most important that all members, including Korea, as well as non members such as Taiwan and Indonesia immediately develop National Plans of Action (NPOAs) for presentation to the FAO. Japan also noted that the ERSWG should be held on a regular basis to exchange information on ERS matters, including results of research activities, which were assessed or conducted by each member. Japan also suggested that each country's NPOA could be discussed within the ERSWG and improvements made if appropriate.

11. Australia indicated that it finalised what was effectively a NPOA for Seabirds in 1998 through the finalisation of its "Threat abatement plan for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations" (TAP). Consequently, the process of development of Australia's NPOA for seabirds would review the existing TAP and refine it as necessary in light of the adoption of the IPOA-Seabirds and other scientific developments.

12. The Working Group agreed that ERSWG meetings should be held on a regular basis to consider cooperative and coordinated actions in the three key areas at regional level to achieve purpose of IPOA.

13. New Zealand provided an overview of its seabird NPOA, which sets catch reduction limits for seabirds, specifies observer coverage levels and defines specific mitigation research. New Zealand sought clarification from Japan regarding the objectives of Japan's NPOA. Japan informed the ERSWG that in addition to the mandatory requirement for use of tori lines, SBT fishing vessels will voluntarily adopt more than one of the four mitigation measures listed in the Japan NPOA. In addition, vessels fishing near Torishima Island will adopt more than two of the voluntary

mitigation measures. Japan also emphasised the importance of training and education of fishermen and people involved in the fishery to encourage the incentives and motivation on implementation of mitigation measures. Japan noted that recent comments made at CCAMLR in regard to its NPOA would be considered by its NPOA review committee. New Zealand noted the importance of clarity in the objectives presented in NPOAs to assist this working group to identify common objectives and mitigation measures.

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

14. Australia presented a paper CCSBT-ERS/0111/39, and reported to the Working Group on the outcomes of the final meeting to negotiate the text of the Agreement on the Conservation of Albatrosses and Petrels. Australia outlined what it saw as the outcomes of this agreement, its relationship to other RFMOs, implications for activities related to conservation of seabirds and its relevance to the ERSWG. Australia also encouraged other members of the Commission to become signatories to the Agreement. New Zealand reported that it had recently signed this Agreement and noted the Commission and ERSWG should be mindful of this Agreement in the work of the ERSWG.

15. New Zealand presented papers CCSBT-ERS/0111/7 and 19 relating to the International Fishers' Forum held in 2000. New Zealand proposed that the Commission note that significant progress was made and urged members to encourage fishers and fishing industry representatives to actively participate in the second forum in Hawaii in 2002.

16. Japan thanked Australia and New Zealand for their presentations of information on these matters and also indicated, while the ERSWG should use the presented information effectively, it should recognize that information from other organizations should be used with the understanding that the objective of the CCSBT, under which the ERSWG was established, is the conservation and optimum utilisation of SBT.

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:

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

17. Australia presented a paper CCSBT-ERS/0111/41, which summarised the findings of CCSBT/ERS/0111/42-44, 46-49 and 75. These papers addressed the impacts of

longline fisheries on seabirds. Australia recommended that the ERSWG note the substantial amount of work being undertaken by many nations on the impact of longline fisheries on seabird populations, that the level of fisheries interactions with seabirds was clearly unsustainable for some populations, and the SBT fishery may be contributing to this situation. It further proposed that this situation needed to be made clear to the Commission, and emphasised the rapid deployment of mitigation measures to address the problem.

18. New Zealand supported the Australia's proposal on this matter and recommended that the Commission continue its activities on this matter.

19. Japan, in raising questions in relation to paper CCSBT-ERS/0111/42, proposed that the ERSWG should consider a comprehensive approach to the matter of seabird conservation because seabird populations' dynamics including albatross were associated with a number of factors in nature and it was essential for all factors to be considered to realise an appropriate conservation framework for seabirds. Japan requested that Australia provide the background document which supported the statement in the Australian paper that: " The level of fisheries interactions with seabirds is clearly unsustainable for some populations …".

20. Australia responded that although a range of other factors such as predation at breeding grounds, environmental degradation, and marine pollution, had led to population declines in other species of albatrosses, no threats beyond interactions with fishing operations were relevant for South Georgia and Crozet Islands populations, the subject of paper CCSBT-ERS/0111/42. These two populations have been extensively studied for over two decades and the results of these studies made available to previous ERSWG meetings. These papers clearly indicated that declines were due to longline fishery activities. Australia undertook to provide a copy of all relevant papers to the Secretariat.

21. New Zealand supported retention of "unsustainable" and noted that this is the view that supports the mitigation work that members of the ERSWG are undertaking. New Zealand noted that as a Commission we will be measured on our response to this issue against that of other commissions such as CCAMLR and we need to strive to achieve best outcomes in this area.

22. Australia also presented a paper CCSBT-ERS/0111/40 regarding shark bycatch in the longline fishery. It indicated that it had commissioned technical reports as the first stage in developing its NPOA. Australia also reported that it had adopted interim measures aimed at improving the sustainability of shark populations.

23. Australia also proposed that in implementing the CCSBT observer program there was opportunity to maximise its value to the Commission through the collection of a range of data on the catch of sharks. ERSWG could also consider possible measures for improving the sustainability of shark populations.

24. New Zealand indicated that the collection and exchange of a range of data on ERS should be undertaken and noted that agreement on Draft Technical Papers 7 and 8 from ERSWG2 should be given high priority by ERSWG.

25. New Zealand presented papers CCSBT-ERS/0111/ 26-34 regarding the relationship between bycatch data and observer coverage, papers CCSBT-ERS/0111/15-18 and 35-37 regarding seabird population monitoring and foraging strategies, papers CCSBT-ERS/0111/10-11 regarding autopsies of seabirds killed as bycatch from fisheries, papers CCSBT-ERS/0111/26-30 regarding non target fish species, papers CCSBT-ERS/0111/12-13 regarding mitigation measures and monitoring of bycatch, papers CCSBT-ERS/0111/22-23 regarding sink rate of baited hooks, papers CCSBT-ERS/0111/25 regarding the underwater line setting chute and paper CCSBT-ERS/0111/21 regarding video monitoring systems considered by CCAMLR.

26. Japan and New Zealand noted the importance of ensuring crew safety in relation to the use of line weighting.

27. Japan presented papers CCSBT-ERS/0111/ 58 reviewing the Japanese RTMP and EFP observer programs in 1998-2000 and CCSBT-ERS/0111/59 regarding estimates of incidental take of seabirds in the Japanese high seas fishery.

28. Japan also made reports on mitigation measures for the incidental take of seabirds. CCSBT-ERS/0111/60 pointed out that more appropriate use of tori-lines would reduce the seabird catches, CCSBT-ERS/0111/61 showed the effectiveness of blue-dyed bait in reducing incidental take of seabirds without affecting fish catch rate, CCSBT-ERS/0111/69 indicated potential effects of night setting on the catch rate of SBT, and CCSBT-ERS/0111/62-64 introduced other techniques including the use of water jets, electric pulses and improving the sink rates of baited hooks.

29. Japan also presented papers CCSBT-ERS/0111/65 regarding distribution of non-targeted fish, CCSBT-ERS/0111/66 on CPUE trends of sharks, and indicated the CPUEs of major shark species are stable or indicate some increase, and CCSBT-ERS/0111/70 regarding reproduction and development of velvet dogfish.

30. Japan presented papers CCSBT-ERS/0111/67 regarding predation on SBT, CCSBT-ERS/0111/68 regarding stomach content analysis of SBT, CCSBT-ERS/0111/72 on the lean condition of SBT, and CCSBT-ERS/0111/71 regarding competition of marine mammals with SBT. Japan pointed out, considering the objectives of the CCSBT Convention, the current situation of the SBT stock, and information which could indicate a drastic decrease of recruitment in recent years, it is necessary and appropriate to conduct research and/or surveys on prey and predator species of SBT, prey competition species, as well as predation of longline-caught SBT.

31. Concerning the predation on the southern bluefin tuna, Japan encouraged Australia and New Zealand to make an effort to conduct the same survey.

32. New Zealand stated that, while it will continue to collect data via its fisheries observer program on the predatory damage to fish, it believes that this matter is an

issue of economics in the fishery and not related to stock status. Therefore New Zealand does not consider this issue to be a priority for research under ERSWG. Australia indicated that it shared this view.

33. Japan stated its view that this research into predatory damage was a priority and noted the IOTC had adopted a similar priority.

34. Japan also proposed a modification to the Guidelines for the deployment of tori lines (**Attachment 4**).

35. Australia and New Zealand thanked Japan for its very interesting presentation and commented as follows:

- In terms of Japan's proposal to modify the guidelines for the deployment of tori lines, Australia and New Zealand welcomed the proposal, but also indicated that it was necessary to consider whether the proposed specification related to tori lines was capable of adoption in their domestic fishing fleets. New Zealand and Australia undertook to inform the Secretariat before the next Commission meeting. They also requested that the Secretariat inform Korea of the guidelines and request that it cooperate in the deployment of tori lines as soon as possible.
- Australia indicated interest in the work being undertaken by both New Zealand and Japan on blue-dyed bait and requested that it be updated on progress intersessionally.
- Australia and New Zealand indicated that the work on the influence of night setting on SBT catch is important. They intend to closely examine the Japanese paper in relation to the confidence limits of the results and may seek intersessional advice from Japan.
- Australia and New Zealand considered it important to continue to monitor shark bycatch and also believe it is important to maintain the ability to control the catch of sharks should this be necessary.
- Concerning leaner SBT in recent years, Australia requested the Scientific Committee consider the material presented by Japan in its presentation and suggest any possible areas for consideration by the ERSWG. New Zealand noted that these issues would appear to be related to stock status and therefore more appropriately addressed by the Scientific Committee.
- Australia indicated that the IWC is the most appropriate organization to consider the nature of any competition between cetaceans and SBT. Australia hoped that Japan would carry forward its paper to that meeting. Australia advised that in its view diet and competition studies on cetaceans was not relevant to SBT fisheries.
- New Zealand stated that the issue of predator/prey relationships with regard to cetaceans and fisheries is already an item on the work program of the IWC. That forum is the most technically competent to deal with this issue. New Zealand noted that given the high work load of the ERSWG, the ERSWG should avoid duplication of work being undertaken in other fora.
- Australia and New Zealand thanked Japan for the material detailing catch data on sharks and other species by area, and asked whether the same species-specific approach could be taken for seabirds.

36. Japan commented that the IWC is considering research on prey/predator and prey/competition only from the point of view of management of Cetaceans stocks. Japan also commented that such research should be conducted from the point of view of the conservation of SBT stock. Therefore it is appropriate to conduct this research under the framework of the CCSBT.

Agenda Item 6 Education and public relations activities

37. New Zealand, Australia and Japan summarised their activities. The Secretariat presented its proposal on development of an eduction pamphlet (paper CCSBT-ERS/0111/74) for common use. The members agreed to work cooperatively based on the Secretariat's proposal, with a view to finalising a draft intersessionally. The Working Group agreed that the three countries provide the Secretariat with their existing education material to form the basis of the pamphlet. Each country nominated a contact person as liason with the Secretariat. Japan nominated Dr Nakano; Australia, Mr Baker; and New Zealand, Ms Molloy.

Agenda Item 7 Update of 'Research Priorities for Mitigation Measures' (ERSWG 3 Attachment 5)

38. The Working Group updated and agreed the `Research Priorities for Mitigation Measures' provide at **Attachment 5** to the Report.

Agenda Item 8 Update of 'ERSWG Operational Framework (ERSWG Attachment 11)

39. The Working Group updated and agreed on the document `ERSWG Operational Framework` (**Attachment 6**).

Agenda Item 9 Proposals for future research activities

40. Australia noted that there had not been an opportunity for substantial discussion on its proposal CCSBT-ERS/0111/55 for an observer programme. It wished to have this proposal attached to the report (**Attachment 7**) as a draft Australian paper to be considered at the next ERSWG meeting. Australia noted papers of this status had not been discussed or been adopted by the meeting.

41. Japan requested that its proposal for future research be attached to the Report (**Attachment 8**). Japan stated that it was disappointed that this proposal was not agreed at the meeting and, taking into account the importance of the proposal, it would make every effort to conduct feasible related research and surveys. Japan also expressed its hope that the proposal would also be discussed at the Commission meeting.

42. New Zealand stated its acceptance at the manner in which Australia and Japan wished to deal with their proposals. On Japan's proposal, New Zealand noted that its views on this matter were well known and included elsewhere in the record.

Agenda Item 10 Future work program

10.1 Draft Agenda for the next ERSWG meeting

43. The Working group agreed to adopt the same Agenda for this meeting as the Draft Agenda for the 5th Meeting of the ERSWG (**Attachment 9**) for consideration by the Commission.

10.2 Inter-sessional work

44. Members expressed their concerns that because of time constraints it was not possible to discuss many of the papers in detail. For these reasons, the Working Group was unable to complete all of its agreed processes or achieve all of its expected outcomes. After an exchange of views, the members agreed on the need to consider ways to improve the way the meetings were conducted. They also agreed to continue exchanging ideas on this intersessionally. Australia also noted that the members had also agreed to continue work intersessionally on other issues such as education activities.

Agenda Item 11 Other business

45. Japan proposed amendments to the format for national reports. The meeting agreed to some proposed additions. The revised format is provided at **Attachment 10**.

46. Japan noted the need to eliminate IUU fishing in order to reduce the by-catch of seabirds. It also proposed that this recommendation be made to the Commission. In noting that all members were committed to the elimination of IUU fishing, New Zealand commented that the achievements of the Commission in bringing non-members into the CCSBT framework would not address the seabird by-catch issue unless the Commission continued with mitigation work within the ERSWG framework.

Agenda Item 12 Conclusion

12.1 Adoption of meeting report

47. Incorporating suggested changes, the report of the Working Group was adopted.

12.2 Recommendation of timing of next meeting

48. The Working Group agreed on the need for it to meet on a regular and timely basis. Noting that the Commission had not budgeted for an ERSWG meeting in 2002, the members recommended that the Commission should decide on the timing and venue for the 5th Meeting of the ERSWG.

12.3 Close of meeting

49. The meeting was concluded at 6:00pm on Wednesday, 28 November 2001.

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LIST OF ATTACHMENTS

ATTACHMENT

Attachment 1

AGENDA
CCSBT – 4th Meeting of Ecologically Related Species Working Group

26 –28 November 2001
Tokyo, Japan

1. Opening

   (i) Election of the Chair
   (ii) Adoption of the Agenda

2. Reports

   (i) Member reports (activities undertaken since last meeting in June 1998)
   (ii) Non-members reports

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:

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

   (b) predator and prey species which may affect the condition of the SBT stock

6. Education and public relations activities

7. Update of 'Research Priorities for Mitigation Measures' (ERSWG 3 Attachment 5)

8. Update of 'ERSWG Operational Framework (ERSWG Attachment 11)

9. Proposals for future research activities

10. Future work program
    (i) Draft Agenda for the next ERSWG meeting
    (ii) Inter-sessional work

11. Other business

12. Conclusion
    (i) Adoption of meeting report
    (ii) Recommendation of timing of next meeting
    (iii) Close of meeting

Attachment 2

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CCSBT
Ecologically Related Species Working Group
26-28 November 2001
Tokyo, Japan

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List of Documents - the 4th Ecologically Related Species Working Group

Attachment 3

Document Number	Title	Author	Year	Source	Agenda item
(CCSBT-ERS/0111/)					
CCSBT-ERS/0111/01	Agenda	Commission	2001		**1**
CCSBT-ERS/0111/02	List of participants	Secretariat	2001		**1**
CCSBT-ERS/0111/03	List of documents	Secretariat	2001		**1**
CCSBT-ERS/0111/04	Distribution and movements of Buller's albatross (Diomedia bulleri) in Australasian seas	J-C Stahl, J A Bartle, N G Cheshire, C Petyt & P M Sagar	1998	New Zealand Journal of Zoology. 25: 109-137	**5**
CCSBT-ERS/0111/05	Seabird Interaction with Fisheries in the New Zealand Exclusive Economic Zone: A Review and National Plan of Action	Anon	Jun-00	Ministry of Fisheries & Department of Conservation	**3**
CCSBT-ERS/0111/06	NZ Signs International Albatross and Petrel Treaty	Anon	Jun-01	Department of Conservation	**3**
CCSBT-ERS/0111/07	Summary Report of the International Fishers' Forum - Solving the Incidental Capture of Seabirds in Longline Fisheries	Anon	2000	International Fishers' Forum	**4**
CCSBT-ERS/0111/08	Report on a Birdlife South Africa Workshop to Design a Medium-Sized Grant Application to the Global Environment Facility (GEF) to Address the Problem of Seabird Mortality by Longline Fishing in Developing Countries; 2-6 April 2001, Cape Town	Deon C. Nel and John Cooper	2001	BirdLife International - South Africa and Avian Demography Unit, South Africa	**4**
CCSBT-ERS/0111/09	Albatross and Petrel Mortality from Longline Fishing International Workshop, Honolulu, Hawaii, USA, 11-12 May 2000. Report and Presented Papers	John Cooper	Aug-00	Marine Ornithology 28:153-158	**4**
CCSBT-ERS/0111/10	Autopsy Report for Seabirds Killed and Returned from New Zealand Fisheries 1 October 1999 to 30 September 2000	C J R Robertson and E Bell	Sep-01	Draft Project Report for the Department of Conservation	**5**
CCSBT-ERS/0111/11	Autopsy Report for Seabirds Killed and Returned from New Zealand Fisheries 1 October 1998 to 30 September 1999	C J R Robertson and E Bell	Jul-01	Draft Project Report for the Department of Conservation	**5**
CCSBT-ERS/0111/12	Approved Conservation Services Plan 2001-2002	Anon	Jul-01	Department of Conservation	**5**
CCSBT-ERS/0111/13	Seabird and Marine Mammal Bycatch Reduction Through Fishing Industry Funded Research: The New Zealand Conservation Services Levy Program	Ian F. West, Janice Molloy, Michael F. Donoghue, Chris Pugsley	1999	MTS Journal. 33:13-18	**5**
CCSBT-ERS/0111/14	Summary of Research on New Zealand Seabirds Vulnerable to Fisheries Interactions	Anon	Sep-01	Department of Conservation	**5**
CCSBT-ERS/0111/15	Population Dynamics of Black-browed and Grey-headed Albatrosses *Diomedea melanophrys* and *D. chrystoma* at Campbell Island, New Zealand, 1942-96	Susan M Waugh, Henri Weimerskirch, Peter J.Moore, Paul M Sagar	1999	Ibis. 141: 216-225	**5**
CCSBT-ERS/0111/16	Population Changes and Biology of the Wandering Albatross *Diomedea exulans gibsoni* at the Auckland Islands	Kath Walker and Graeme Elliott	1999	EMU. 99: 239-247	**5**
CCSBT-ERS/0111/17	Population Size and Trends within the two populations of Southern Buller's Albatross *Diomedea bulleri bulleri*	P M Sagar, J C Stahl, J Molloy, G A Taylor, A J D Tennyson	1999	Biological Conservation. 89: 11-19	**5**
CCSBT-ERS/0111/18	New Zealand Black-browed Albatross *Diomedea melanophrys impavida* and Grey-headed Albatross *D. chrystoma* Banded at Campbell Island: Recoveries from the South Pacific Region	S M Waugh, P M Sagar, R O Cossee	1999	EMU. 99: 29-35	**5**
CCSBT-ERS/0111/19	www.fishersforum.org/ Web Page	Anon	2001	International Fishers' Forum	**4**

CCSBT-ERS/0111/20	The Tuna Fishers' Folder	Anon	2000	Department of Conservation	**6**
CCSBT-ERS/0111/21	An Update on Developments Toward Video Monitoring of Seabird Incidental Mortality	N W McL Smith	2001	CCAMLR WG-FSA-01/57 Working Paper	**5**
CCSBT-ERS/0111/22	Solving Incidental Capture of Seabirds onPelagic Longline Fisheries - progress in New Zealand	Janice Molloy, Crispin Keith and Simon Anderson	2000	Department of Conservation, Science Poster No. 30	**7**
CCSBT-ERS/0111/23	Sink Rate of Baited Hooks during Deployment of a Pelagic Longline from a New Zealand Fishing Vessel	Simon Anderson and Brian McArdle	2001	NZ Journal of Marine & Freshwater Research. In press	**7**
CCSBT-ERS/0111/24	Preliminary Assessment of Hook Sink Rates using Two Branch Line Types Aboard FV *Ikatere*	Simon Anderson	2001	Draft Project Report for the Department of Conservation	**7**
CCSBT-ERS/0111/25	Preliminary Performance Assessment of an Underwater Line Setting Device for Pelagic Longline Fishing	D. O'Toole & J. Molloy	2000	NZ Journal of Marine & Freshwater Research. 34:455-461	**7**
CCSBT-ERS/0111/26	Fish Bycatch in New Zealand Tuna Longline Fisheries, 1998-99 to 1999-2000	Malcolm P Francis, Lynda H Griggs, Suze J Baird	2001	Draft NIWA Technical Report	**5**
CCSBT-ERS/0111/27	Factors that might influence the Catch and Discards of Non Target Fish Species on Tuna Longlines	E Bradford	Sep-01	Draft New Zealand Fisheries Assessment Report	**5**
CCSBT-ERS/0111/28	A Review of Literature Relevant to the Assessment of the Stock Status of Striped Marlin and Ray's Bream in New Zealand	M P Francis and L H Griggs	Aug-01	Final Research Report for Ministry of Fisheries Research Project ENV2000/03 Objective 3	**5**
CCSBT-ERS/0111/29	Observer Coverage and Accuracy of Catch Estimates	E Bradford	Sep-01	Final Research Report for Ministry of Fisheries Research Project ENV2000/03 Objective 4	**5**
CCSBT-ERS/0111/30	Pelagic Shark Bycacth in the New Zealand Tuna Longline Fishery	Malcolm P Francis, Lynda H Griggs, Susan Jane Baird	2001	Marine & Freshwater Research. 52: 165-178	**5**
CCSBT-ERS/0111/31	Estimation of Nonfish Bycatch in Commercial Fisheries in New Zealand Waters, 1997-98	S J Baird	Sep-99	Final Research Report for Ministry of Fisheries Research Project ENV9801 Objective 1	**5**
CCSBT-ERS/0111/32	Estimation of the Incidental Capture of Seabird and Marine Mammal Species in Commercial Fisheries in New Zealand Waters, 1998-99	S J Baird	2001	New Zealand Fisheries Assessment Report 2001/14	**5**
CCSBT-ERS/0111/33	Estimation of the Incidental Capture of Seabird and Marine Mammal Species in Commercial Fisheries in New Zealand Waters, 1999-00	S J Baird	Jul-01	Draft New Zealand Fisheries Assessment Report	**5**
CCSBT-ERS/0111/34	Factors that may have influenced seabird bycatch on tuna longlines in New Zealand waters, 1986-87 to 1997-98	S J Baird & E Bradford	2000	NIWA Technical Report 93	**5**
CCSBT-ERS/0111/35	Foraging stratagies and migration of southern Buller's albatrosses Diomedia b. bulleri breeding on the Solander Is, New Zealand	J C Stahl & P M Sagar	2000	Journal of the Royal Society of New Zealand. 30 (3): 319-334	**5**
CCSBT-ERS/0111/36	Diet of southern Buller's albatross (Diomedea bulleri bulleri) and the importance of fishery discards during chick rearing	G D James & J-C Stahl	2000	New Zealand Journal od Marine and Freshwater Research. 34: 435-454	**5**
CCSBT-ERS/0111/37	Foraging stratagies of southern Buller's albatrosses Diomedia b. bulleri breeding on The Snares, New Zealand	J-C Stahl & P M Sagar	2000	Journal of the Royal Society of New Zealand. 30 (3): 299-318	**5**
CCSBT-ERS/0111/38	Review of relevant international instruments - cooperation at a regional scale to achieve the objectives of international plans of action.	Australia			**3**
CCSBT-ERS/0111/39	Agreement on the conservation of albatrosses and petrels (report on final drafting meeting)	Australia (Montgomery, N.)			**4**

CCSBT-ERS/0111/40	Papers submitted by the delegation of Australia on ERS species which may be affected by SBT fisheries operations - shark bycatch in longline fishing.	Australia			**5(a)**
CCSBT-ERS/0111/41	Papers submitted by the delegation of Australia on the impacts of longline fishing on ecologically related species.	Australia			**5**
CCSBT-ERS/0111/42	Modelling the impact of fishery bycatches on albatross populations.	Tuck, G., Polacheck, T., Croxall, J.P. and Weimerskirch, H.	2001	Journal of Applied Ecology 38.	**5**
CCSBT-ERS/0111/43	Seabird mortality on longlines in Australian waters: A case study of progress and policy.	Gales, R., Brothers, N., Reid, T., Pemberton, D. and Baker, G.B.	1999	s. 12.1 in Adams N.J. and Slotow, R.H. (eds). Proceedings of 22nd International Ornithological Congress, Durban. Birdlife South Africa, Johannesburg.	**5**
CCSBT-ERS/0111/44	Seabird by-catch by tuna longline fisheries off southern Africa, 1998-2000.	Ryan, P.G., Keith, D.G. and Kroese, M.	In Press	South African Journal of Marine Science 24.	**5**
CCSBT-ERS/0111/45	not presented				
CCSBT-ERS/0111/46	Seabird interactions with longline fishing in the AFZ: 1999 seabird mortality estimates and 1988-1999 trends.	Reid, T., Brothers, N. and Gales, R.	2001	Wildlife Report 01/4, Department of Primary Industry, Water and the Environment, Hobart, Tasmania.	**5**
CCSBT-ERS/0111/47	Foraging strategies of shy albatross *Thalassarche cauta* breeding at Albatross Island, Tasmania, Australia.	Hedd, A., Gales, R. and Brothers, N.	2001	Marine Ecology Progress Series (in press)	**5**
CCSBT-ERS/0111/48	Global status of albatrosses and macronectes and procellaria petrels.		2000	from BirdLife International, 2000. Threatened Birds of the World.	**5**
CCSBT-ERS/0111/49	Australian research underway on seabirds vulnerable to fisheries interactions.	Australia (Baker, B. and Gales, R.)			**5**
CCSBT-ERS/0111/50	Implementation of Australia's Threat Abatement Plan for the incidental catch of seabirds during oceanic longline fishing operations.	Australia (Baker, B. and Hewitt, T.)			**7**
CCSBT-ERS/0111/51	Papers submitted by the delegation of Australia on mitigation research.	Australia			**7**
CCSBT-ERS/0111/52	Bycatch action plan Australia's tuna and billfish fisheries and background paper.	Tuna fisheries bycatch action plan working group.	2001		**7**
CCSBT-ERS/0111/53	The effect of line weighting on the sink rate of pelagic tuna longline hooks, and its potential for minimising seabird mortalities.	Brothers, N., Gales, R., and Reid, T.	2001	Department of Primary Industries, Water and Environment, Tasmania.	**7**
CCSBT-ERS/0111/54	Performance assessment and performance improvement of two underwater line setting devices for avoidance of seabird interactions in pelagic longline fisheries.	Brothers, N., Chaffey, D., and Reid, T.	2000	AFMA Research Fund Project R2000/0469	**7**
CCSBT-ERS/0111/55	Proposal for maximising the value of implementation of a CCSBT scientific observer program.	Australia			**9**
CCSBT-ERS/0111/56	Japan's National Plan of Action for reducing incidental catch of seabirds in lingline fisheries	Japan	2001		**3**
CCSBT-ERS/0111/57	Japan's National Plan of Action for the Conservation and Management of Sharks	Japan	2001		**3**
CCSBT-ERS/0111/58	Review of the Japanese RTMP and EFP observer programs in the high sea waters in 1998-2000 fishing years	M. Kiyota and H. Minam	2001		**5**
CCSBT-ERS/0111/59	Estimation of incidental take of seabirds in the Japanese Southern Bluefin Tuna longline fisheries in 1998-2000	M. Kiyota, D. Shiode and Y. Takeuchi	2001		**5**

CCSBT-ERS/0111/60	Evalution of efficiency of Tori-pole on incidental takes of Albatross from observer data of Japanese southern bluefin tuna longline fisheries	D. Shiode, M. Kiyota and Y. Takeuchi	2001		**5**
CCSBT-ERS/0111/61	Effect of blue-dyed bait on reduction of incidental take of seabirds	H. Minami and M. Kiyota	2001		**5**
CCSBT-ERS/0111/62	Basic study on prevention of incidental catch of seabirds in tuna longline	H. Sakai, H. Fuxiang and T. Arimoto	2001		**5**
CCSBT-ERS/0111/63	Development and tests of water jet device to avoid incidental take of seabirds in tuna longline fishery	M. Kiyota, H. Minami and M. Takahashi	2001		**5**
CCSBT-ERS/0111/64	Experiment of Super DC Pulse System to reduce incidental catch of seabirds	T. Kitamura, T. Kumagai, K. Koyama, T. Nakamura and H. Nakano	2001		**5**
CCSBT-ERS/0111/65	Distribution of teleosts and elasmobranches dominated in the SBT fishery	H. Matsunaga and Y. Takeuchi	2001		**5**
CCSBT-ERS/0111/66	Standardized CPUE and catch for the main pelagic shark species dominated in the SBT fishery	H. Matsunaga, H. Nakano and H. Minami	2001		**5**
CCSBT-ERS/0111/67	Preliminary analyses on the predation of longline caught Southern Bluefin Tuna (Thunnus Maccoyii) (September 2000-September 2001)	T. Nishida	2001		**5(b)**
CCSBT-ERS/0111/68	Preliminary result of feeding ecology analysis of southern bluefin tuna based on stomach samples collected from offshore longline vessels.	T. Ito	2001		**5(b)**
CCSBT-ERS/0111/69	Influence of Night Setting on Catch Rate for Southern Bluefin Tuna	D. Shiode, Y. Takeuchi, Y, Uozumi	2001		**5**
CCSBT-ERS/0111/70	Reproduction and embryonic growth of velvet dogfish observed in the SBT fishing ground	K. Oshima and H. Nakan	2001		**5**
CCSBT-ERS/0111/71	Some consideration on conflict between Southern Bluefin Tuna and Marine mammals, especially cetaceans	H. Kato and T. Tamura	2001		**5(b)**
CCSBT-ERS/0111/72	Weight-at-length of southern bluefin tuna in the 1990s compared to those in the 1960s and 1970s.	T. Ito	2001		**5(b)**
CCSBT-ERS/0111/73	Guidance, extension and educational activities in ecologically related species	H.Nakano	2001		**6**
CCSBT-ERS/0111/74	Education and public related activities-pamphlet development	Secretariat	2001		**6**
CCSBT-ERS/0111/75	Foraging white-chinned petrels Procellaria aequinoctialis at risk from the tropics to Antarctica	H.Weimerskirch, A.Catard, P.A.Prince, Y Cherel, J P.Croxall	1999	Bioligical Conservation 87 (1999) 273-275	**5**
CCSBT-ERS/0111/76	Preliminary summary of the landing and handling status of observed longline-caught SBT, including stomach content analyses and damage by marine mammals, 1987-2000.	L. Griggs	2001	NIWA Technical Report	**5**
(CCSBT-ERS/0111/Annual Rep-)					
CCSBT-ERS/0111/Annual Rep-Australia	Member's Annual Report to ERSWG4	Australia	2001		**2**
CCSBT-ERS/0111/Annual Rep-Japan	Annual Report of Japan	Japan	2001		**2**

CCSBT-ERS/0111/Annual Rep-New Zealand	New Zealand Country Report: Ecologically Related Species in the Southern Bluefin Tuna and Related Tuna longline Fisheries in the New Zealand 200n. Mile EEZ, 1997-98 to 1999-00	New Zealand	Nov-01	Delegation of NZ to CCSBT ERSWG4	**2**
(CCSBT-ERS/0111/Info/)					
CCSBT-ERS/0111/Info/01	Working Group on Ecologically Related Species (ERS) - Terms of Reference				
CCSBT-ERS/0111/Info/02	Recommendations for Ecologically Related Species- Attachment29 of CCSBT5(1) report				
(CCSBT-ERS/0111/Rep/)					
CCSBT-ERS/0111/Rep/01	Report of the Third Meeting of the Ecologically Related Species Working Group				

Attachment 4

Deployment of Tori Lines (Japan's proposal)

1. The line should be suspended from a pole affixed to the vessel. The tori pole should be set as high as possible so that the line protects bait a good distance astern of the vessel and won't tangle with fishing gear. Greater pole height provides greater bait protection. For example, a height of around 6 m above the water line can give about 100 m of bait protection.
2. The tori line should be set so that streamers pass over baited hooks in the water.
3. The vertical distance from the deck of the vessel to the top of the pole should be over 5m.
4. Deployment of multiple tori lines is encouraged to provide even greater protection of baits from birds.
5. Because there is the potential for line breakage and tangling, spare tori lines should be carried onboard to replace damaged lines and to ensure fishing operations can continue uninterrupted.
6. When fishers use a bait casting machine (BCM) they must ensure coordination of tori line and machine by:
   a) ensuring the BCM throws directly under the tori line protection and
   b) when using a BCM that allows throwing to port and starboard, ensure that two tori lines are used.
7. Fishers are encouraged to install manual, electric or hydraulic winches to improve ease of deployment and retrieval of tori lines.

A standard design is detailed in various educational material available to fishers eg. Longline fishing dollars and sense, Catch fish not birds, and Fish the seas not the sky.

Attachment 5

Research Priorities for Mitigation Measures

In recent years a number of mitigation measures have been developed and are now used by fishers. For some of these measures, further improvements in their effectiveness in minimising incidental capture of seabirds could be made through experimentation. Also the effect on target and non-target fish may need to be assessed for some mitigation measures.

In addition to exisiting measures, Japan, New Zealand and Australia are engaged in research into new measures. There are also a number of possible measures which are not being actively developed, but which exist as concepts.

The ERSWG has prepared a summary of existing and potential mitigation research in table form, for endorsement by the Commission. This table highlights the research currently underway by the three parties, and helps identify possible areas of collaboration. It is recognised that each party is likely to have different research priorities because of differences between fleets. For this reason, the priorities for each party are shown separately.

The table should be treated as a guide only, and will need to remain flexible. New ideas or results of research are likely to alter country priorities over time. The table could be updated on an annual basis.

Research which is being undertaken by parties outside the Commission and which may be of interest to the three countries is included in the table.

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	Timeframe for Input to ERSWG
				Japan	NZ	Australia[1]			
Presently Used									
Night setting	• effect on SBT-CPUE	• analyse existing databases, at sea experiments,	Australia Japan NZ	high	high	high	• 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	ERSWG 5
	• effect on non-target fish	• analyse existing databases	-	med	med	med			
	• effect of light levels on seabird capture (e.g. moon, cloud)			med	med	med			
	• ways to minimise hazards to crew			high	low	low			
	• effect of night setting on crew efficiency			high	low	low			
Bait-casting machine	• effectiveness in combination with tori line	• at sea experiments	-	med	low	low	• input from fishers • designing experiment • technical advice • sharing analyses	95/14 9806/17 9806/25	
	• effectiveness of different models	• at sea experiments	-	med	low	med			
Line weighting (mainline and snoods)	• optimum weighting and position of weights for different gear	• at sea experiments	Australia Taiwan Japan	med	med	high	• input from fishers • designing experiment • technical advice • sharing analyses	95/33 95/39 9806/12 0111/23 0111/24 0111/53 0111/62	ERSWG 5
	• Effect on SBT CPUE		-	med	high	high			
	• ways to minimise hazards to crew	• gear modifications or changes to haul operation	USA (Hawaii)	high	med	high			
Colouring baits	• identification of a short-lasting dye	• trials with existing dyes	USA (Hawaii) Japan	high	med	low	• input from fishers • designing experiment	0111/61	
	• effectiveness in reducing		NZ	high	low	low			

	seabird captures • effect on SBT CPUE	• at sea experiment • at sea experiment • trials with farmed tuna		high	low	low	• technical advice • sharing analyses		

Mitigation Measure	**Research Need(s)**	**Method**	**Country Undertaking Research**	**Country Priorities (high, medium, low)**			**Opportunities for Collaboration**	**Past ERSWG papers**	**Timeframe for Input to ERSWG**
				Japan	NZ	Australia			
Tori lines	• most effective design for different fleets	• at sea experiments	Japan Australia New Zealand USA (Hawaii)	high	high	high	• 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	ERSWG 5
Sound deterrents	• effectiveness in reducing seabird captures	• at sea experiments	Japan Australia NZ	low	low	low	• input from fishers • designing experiment • technical advice • sharing analyses		
Under Development									

Underwater setting	• development of technology • best position to place baits • effectiveness in reducing seabird captures	• development of technology • at sea experiments • advice from hydro-engineers • at sea experiments	NZ Australia USA (Hawaii) Japan Australia NZ Australia NZ	med med med	high high high	high high high	• 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	ERSWG 5
Water cannon	• effectiveness in reducing seabird captures	• at sea experiment	Japan	low	low	low	• input from fishers • designing experiment • sharing analyses • technical advice	0111/63	
Mitigation Measure	**Research Need(s)**	**Method**	**Country Undertaking Research**	**Country Priorities (high, medium, low)**			**Opportunities for Collaboration**	**Past ERSWG papers**	**Timeframe for Input to ERSWG**
				Japan	NZ	Australia	•		
Potential									
Smart hooks	• development of a hook that becomes “armed” below a pre-determined depth • effect on SBT CPUE • effectiveness in reducing seabird captures	• development of technology • at sea experiments • at sea experiments	Australia - -	low low low	low low low	low low low	• input from fishers • designing experiment • sharing analyses • technical advice		

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	Australia - - -	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 • 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	• input from fishers designing • experiment • sharing analyses • technical advice		
Other Research on ERS									
Research on by-catch by purse seine fishery	Observation on bycatch of non-SBT species	At sea observation	Countries which has purse seine fishery	?	?	med	Sharing analyses		ERSWG5

1. The assignment of low priority to issues dealing with crew safety relates to Australia's comment on the likelihood of crew safety being an issue in relation to the use of these mitigation measures. Existing mechanism place considerable emphasis on crew safety issues.

Attachment 6

ERSWG OPERATIONAL FRAMEWORK

The Commission requires the ERSWG to provide information and advice based on research which:

- determines the nature and extent of ERS interactions in SBT fisheries
- determines the affects of SBT and other fisheries on ERS
- assesses current or potential measures to reduce ERS captures

The ERSWG also has a role in the development of advice on best practice for educational activities. The ERSWG will provide advice and recommendations on these issues and on research priorities to the Commission through the Scientific Committee.

To enable ERSWG to effectively carry out its responsibilities, an agreed operational framework is required. The following table details a operational framework for consideration and endorsement by the Commission. This framework is intended to be an evolving one. Work areas included in the table are considered to be of high priority for the ERSWG, and will form the basis for key discussions and output from ERSWG meetings. This does not preclude discussion of other items.

The framework will be reviewed at ERSWG meetings, where items and information can be added, deleted or modified, taking account of the degree of progress of the projects.

Commission Requirements (Broad Areas of Work)	Relevant Terms of Reference	Research Questions/ Objective	Input	ERSWG Process	Outputs	Time Frame	Status	Notes
CURRENT WORK PRIORITIES FOR THE ERSWG								
A) Assessment of ERS interactions with SBT fisheries	2 a 3 a)iii)	1) Provision of estimates of incidental seabird take in SBT fisheries	Relevant sections from members' annual reports to the ERSWG, scientific papers and/or data as appropriate	Each member provides necessary papers and/or data in electronic format to the Secretariat for distribution three weeks in advance of the ERSWG. An agenda item at the ERSWG is dedicated to review of the papers presented and/or analyses of data and the development of a section for inclusion in the report to the Commission.	Report from ERSWG to Commission which synthesises information provided by the three members, provides advice on, and identifies, areas of further research and cooperation, including potential mitigation measures.	ERSWG 5	Annual and ongoing	ERSWG/proj/A.1

Commission Requirements (Broad Areas of Work)	Relevant Terms of Reference	Research Questions/ Objective	Input	ERSWG Process	Outputs	Time Frame	Status	Notes
	To be included	2) What factors influence seabird captures in SBT fisheries?	Relevant sections from members' annual reports to the ERSWG, scientific papers and/or data as appropriate	Each member provides necessary papers and/or data in electronic format to the Secretariat for distribution three weeks in advance of the ERSWG. An agenda item at the ERSWG is dedicated to review of the papers presented and/or analyses of data and the development of a section for inclusion in the report to the Commission.	Advice on key factors which influence seabird bycatch, those factors warranting further investigation and, potential mitigation measures	ERSWG5	—	ERSWG/proj/A.2
B) Development and Assessment of Effectiveness of Mitigation Measures	To be included	1) How can the design and deployment of tori lines be optimised to minimise seabird captures? 2) Development of blue-dyed bait 3) Research on effect on SBT-CPUE of night setting	Relevant sections from members' annual reports to the ERSWG, scientific papers and/or data as appropriate and information from fishers	Each member provides necessary papers and/or data in electronic format to the Secretariat for distribution three weeks in advance of the ERSWG. An agenda item at the ERSWG is dedicated to review of the papers presented and/or analyses of data and the development of a section for inclusion in the report to the Commission.	Advice on amendments or improvements to the guidelines for tori pole design and deployment (ERSWG3 Attachment 6)	ERSWG5	—	ERSWG/proj/B.1

Commission Requirements (Broad Areas of Work)	Relevant Terms of Reference	Research Questions/ Objective	Input	ERSWG Process	Outputs	Time Frame	Status	Notes
C) ERS Interactions with SBT	To be included	1) Identification of 'other' ERS						ERSWG/proj/C.1
D) Education and Public Relations		1) Promote awareness of ERS issues to fishers 2) Promote awareness of appropriate use of tori lines	Secretariat to work with members to develop framework and draft text for pamphlet using existing resources such as those outlined in ERSWG3 Attachment 8	Circulate draft framework and text for pamphlet three weeks prior to the ERSWG4. Exchange of members' views and information to occur intersessionally	Draft text for a CCSBT pamphlet	ERSWG5		ERSWG/proj/D.1
FUTURE WORK AREAS OF HIGH PRIORITY FOR ERSWG								
E) Proposals for Future Research or Activities[1]			Research plan(s) Results of the review of scientific papers	Review of research plans	Recommendations to the Commission Research questions/proposals		Annual	.

[1] Once a research proposal under E) is agreed by the ERSWG and CCSBT, the relevant research question or objective from the proposal would move up into current work priorities section of the table.

Attachment 7

PROPOSAL FOR MAXIMISING THE VALUE OF IMPLEMENTATION OF A CCSBT SCIENTIFIC OBSERVER PROGRAM

(Delegation of Australia)

PROPOSAL FOR MAXIMISING THE VALUE OF IMPLEMENTATION OF A CCSBT SCIENTIFIC OBSERVER PROGRAM

RELEVANT AGENDA ITEM: Item 9

PURPOSE

To develop a minimum set of data collection criteria and protocols for an observer program which will improve knowledge of bycatch in CCSBT fisheries, which will provide a stronger scientific basis for decision making and improved management of the fishery.

BACKGROUND

Scientific Observer Programs are internationally accepted as an essential component in any fisheries management system and the development and implementation of an observer program was identified as a key element of the CCSBT Scientific Research Program (SRP).

The fifth meeting of the CCSBT Scientific Committee (SC 5), in Tokyo in March 2001, under the guidance of the Advisory Panel, developed a draft proposal that identified principles governing the type of information that should be collected under the scientific observer program, in addition to principles that should govern the implementation of an observer program for the CCSBT (**Attachment A**).

Inter-sessionally, the Chair of the Scientific Committee produced a summary of information collected on past and existing tuna fishery observer programs. Dr Ianelli of the Advisory Panel and the Chair of the Scientific Committee prepared a draft proposal on the main components of an effective CCSBT scientific observer program, to serve as a basis for further discussion. The sixth meeting of the Scientific Committee (SC 6) in Tokyo in August 2001 discussed information on existing observer programs in order to make initial recommendations on the development of SBT observer programs and standards (**Attachment B**).

Further inter-sessional work will be undertaken to gain an indication of the extent to which past and existing observer programs cover the proposed observer program components, as well as an indication of existing observer coverage of SBT fleets.

SC 6 also recognized that a process would be required to ensure that progress was made during 2002 in development of proposals for observer data collection and training standards, so that this proposal could be finalised at the next SC meeting. Members noted that substantial work had already been done on developing observer program standards for the Real Time Monitoring Program (RTMP) but, in some cases, observer standards had changed or improved since then. It should be straightforward to establish standards, at least for longline observer programs. Similar observer standards had not been developed yet for surface fisheries catching southern bluefin tuna, but information was available from other organizations involved with surface fisheries on tuna. It was noted that implementation of the proposed tagging program would create an urgent need for an observer program to estimate tag reporting rates and to provide size-composition data required to analyse tag recapture data. There has been some experience with observer programs and bycatch reporting of turtle and shark bycatch in tropical fisheries bodies and in the northern hemisphere. The extent to which this data can be extrapolated or inferred for these taxa in the management of temperate SBT fishing is unknown.

With respect to longline fisheries, SC 6 agreed to take the following steps during the remainder of 2001 and early 2002:

— Existing observer program data sheets and standards for longline fleets would be exchanged between member countries, through the Secretariat, as soon as possible. The Secretariat would initiate this process in consultation with national observer program coordinators.

— The Secretariat would coordinate an exchange of this information between national observer program coordinators during 2002. Proposals on draft CCSBT observer program standards will be presented and finalised at the next SC meeting.

Two major objectives of the SBT observer program include the verification of logbook data and verification of levels of tag recovery and reporting rates. Consistent with the issue of verification of logbook data, there is the need to include catches of non-target bycatch species such as seabirds, sharks and turtles to increase scientific knowledge and data in terms of gear interaction with non-target species. The development and implementation of an observer program for SBT provides an opportunity to collect such data.

RECENT DEVELOPMENTS

Within Australia's Tuna and Billfish Fisheries, an observer program has recently been established to evaluate the performance of an underwater setting chute, particularly with respect to its performance in minimising the bycatch of seabirds. Specific objectives of this program include:

— to quantify the number of seabird interactions at the point of longline set and haul. This requires observation, where possible, of every branchline set and hauled, and careful recording of every seabird interaction;
— to record details of the vessel and its fishing operations in logbooks, to assist in determining why or why not seabirds are caught;
— to verify all logbook records of catches;
— to monitor and report the captures of any tagged or banded organisms during the trial;
— to deploy time depth recorders to determine the sink rate of baited hooks. These recorders are deployed on a minimal basis to gather information on the immediate and subsequent effect that the underwater setting chute is having on setting depth;
— to collect data on the abundance and behaviour of seabirds during set and haul operations, as a surrogate measure of seabird interactions and the performance of the underwater setting chute;
— where practicable, to collect data and samples of the catch to determine biological characteristics of target and bycatch species for subsequent analysis; and
— to provide advice and assistance in relation to the chute trial to the vessel's Masters if requested.

To assist the Commission in the development of a CCSBT Scientific Observer Program, particular with regard to data collection on ecologically related species, the observer program data sheets from the Australian program are submitted for consideration by the ERSWG. Australia submits these to ERSWG with a view to their discussion and submission to Scientific Committee for endorsement as the minimum level and type of information required to obtain reliable estimates of incidental catch of ecologically related species, and the nature of the interaction. The collection of such data will assist in aligning regional management

with domestic expectations. Such observer-generated data will also enable judgements to be made about the efficacy of bycatch mitigation efforts.

APPENDIX 4 – VESSEL & VOYAGE SUMMARY

VESSEL VOYAGE SUMMARY **TAP FORM - 1**

OBSERVER NAME

OBSERVER LAST NAME	
OBSERVER FIRST NAME	
OBSERVER VOYAGE ID #	

TIME ZONE

Record in this field the time zone that you have used when recording data on this voyage. You should use ship's time, which may not be local time. Use only one time zone per voyage. **UTC +**

VOYAGE DETAILS

DEPARTURE (SHIP DATE AND TIME)				
DD	MM	YY	hh	mm

DEPARTURE TYPE (circle)	PORT OR VESSEL NAME
PORT	
TRANSFER	

RETURN (SHIP DATE AND TIME)				
DD	MM	YY	hh	mm

RETURN TYPE (circle)	PORT OR VESSEL NAME
PORT	
TRANSFER	

VESSEL

VESSEL NAME	
VESSEL OWNER	

DISTINGUISHING SYMBOL	
AFZ AREA OF OPERATION	

ACTIVITY SUMMARY

TOTAL # OF HOOKS SET	
TOTAL # OF HOOKS OBSERVED	
TOTAL # OF SETS	
TOTAL # OF SETS OBSERVED	
TOTAL # OF HAULS OBSERVED	
TOTAL # OF BIOLOGICAL DATA SHEETS	
TOTAL # OF SEABIRD ABUNDANCE DATA SHEETS	
TOTAL # OF SEABIRD INTERACTION DATA SHEETS	
TOTAL # OF SEABIRD SAMPLES RETAINED	

TOTAL # OF FISH TAGS COLLECTED	
TOTAL # OF BIRD BANDS COLLECTED	
TOTAL # OF DAYS ABOARD	
TOTAL # OF FISHING DAYS	
TOTAL # OF STEAMING DAYS	
TOTAL # OF SEARCHING DAYS	
TOTAL # OF DAYS LOST TO BREAKDOWN	
TOTAL # OF DAYS LOST TO WEATHER	
TOTAL # OF FISH SAMPLES RETAINED	

VESSEL REPORTED TAGGED FISH & BIRD BANDS

TAG OR BAND # AND COLOUR	SPECIES CODE	DATE OF CAPTURE	POSITION		LCF	WEIGHT (kgs)	SST
			LATITUDE	LONGITUDE			
		/ /					
		/ /					
		/ /					
		/ /					

OBSERVER MARKED & RELEASED SEABIRDS

MARKING COLOUR	POSITION MARKED	SPECIES CODE	DATE OF RELEASE	POSITION RELEASED		OBSERVED AGAIN	
				LATITUDE	LONGITUDE	YES	NO
			/ /				
			/ /				
			/ /				
			/ /				

COMMENTS

Revised AFMA JULY 2001

APPENDIX 5 – VESSEL & FISHING GEAR DETAILS

VESSEL & FISHING GEAR DETAILS **TAP FORM - 2**

VESSEL NAME:	

DEPARTURE DATE:		
DD	MM	YY

OBSERVER TRIP ID NUMBER:	
NATIONALITY:	

VESSEL DETAILS

HOME PORT	
DISTINGUISHING SYMBOL:	
INTERNATIONAL CALL SIGN:	
GROSS TONNAGE (GRT):	
LENGTH OVERALL (LOA) meters:	
FREEBOARD HEIGHT (cm):	
YEAR OF MANUFACTURE:	
MAIN ENGINE BRAKE POWER (kw):	
FUEL CAPACITY (tonnes):	
TOTAL FUEL CAPACITY (tonnes /day while fishing):	
TOTAL FREEZER CAPACITY (VOLUME) cm3:	
TOTAL RSW CAPACITY (VOLUME) m3:	
BLAST FREEZER CAPACITY (tonnes / day):	

CREW DETAILS

CAPTAIN'S LAST NAME:	
CAPTAIN'S FIRST NAME:	
YEAR'S EXPERIENCE AS A LONGLINE CAPTAIN:	
YEARS EXPERIENCE IN THE LONGLINE FISHERY:	
TOTAL NUMBER OF CREW:	
OTHER	
OTHER	

ELECTRONIC FISHING EQUIPMENT

ELECTRONIC EQUIPMENT		MANUFACTURER / MODEL
GPS 1	Y N	
GPS 2	Y N	
RADIO DIRECTION FINDER 1	Y N	
RADIO DIRECTION FINDER 2	Y N	
RADAR 1	Y N	
RADAR 2	Y N	
WEATHER FACSIMILE	Y N	
TRACK PLOTTER	Y N	
SOUNDER 1	Y N	
SOUNDER 2	Y N	
SONAR	Y N	
NOAA RECEIVER	Y N	
SST RECORDER 1	Y N	
SST RECORDER 2	Y N	
LINE CASTING CONTROLLER	Y N	
INMARSAT SERVICE	Y N	
VMS	Y N	
OTHER	Y N	
OTHER	Y N	

FISHING GEAR DESCRIPTION

MAINLINE MATERIAL	
MAINLINE SIZE (mm)	
MAINLINE LEN (km)	
BUOYLINE MATERIAL	
BUOYLINE 1 LEN (m)	
BUOYLINE 2 LEN (m)	
MAINLINE HAULER	Y N
BRANCHLINE HAULER	Y N
BRANCHLINE HAULER #	
DISTANCE FOR STERN (cm) (BRANCHLINE HAULER)	
BRANCHLINE HAULER POSITION (circle)	Port Starboard
LINE SHOOTER	Y N
TORI POLE	Y N

BRANCHLINE CODE	A	B	C	D	E
BRANCHLINE #'s					
UPP BRANCH MATERIAL					
UPP BRANCH LENGTH (cm)					
SEKIYAMA MATERIAL					
SEKIYAMA LENGTH (cm)					
LEADER MATERIAL					
LEADER LENGTH (cm)					
LEADER B/S (kgs)					
TOTAL BRANCHLINE LENGTH (cm)					
LEAD WEIGHT	Y N	Y N	Y N	Y N	Y N
WEIGHT SIZE (grms)					
WEIGHT POSITION FROM HOOK (cm)					
HOOK TYPE					
HOOK SIZE					

CHUTE DESCRIPTION

CHUTE SERIAL #	

COMMENTS

APPENDIX 6 – SET DETAILS

SET DATA COLLECTION FORM — **TAP FORM - 3**

OBSERVER NAME:		OBSERVER TRIP ID NUMBER:		SET #:	
VESSEL NAME:		SHIP'S START OF SET DATE AND TIME (DD / MM / YY / hh / mm)		PAGE OF	

SET DETAILS

TOTAL # OF HOOKS SET		VESSEL SPEED (kts)		BAROMETER (circle)	Rise Fall Steady
# OF BUOYS SET		LINE SHOOTING SPEED (m/s)			
# OF BEACONS SET		TIMER SETTING (seconds)			
# OF HOOKS PER BUOY		DIST BETWEEN BRANCHLINES (m)			
MIN HOOK DEPTH (m)		TDR DEPLOYED (circle)	Y N		
MAX HOOK DEPTH (m)		TARGET SPECIES			
BAROMETER (mb)					

BAIT USED

SPECIES	LIFE STATUS	KGS	HOOK #'s	THAW STATE
				POOR
				0-30%
				FAIR
				40-70%
				GOOD
				80-100%

LIGHTSTICKS USED

BRAND	
COLOUR 1	
COLOUR 2	
HOOK #'s	
# DEPLOYED	
# RETRIEVED	
OTHER	

SET LOG

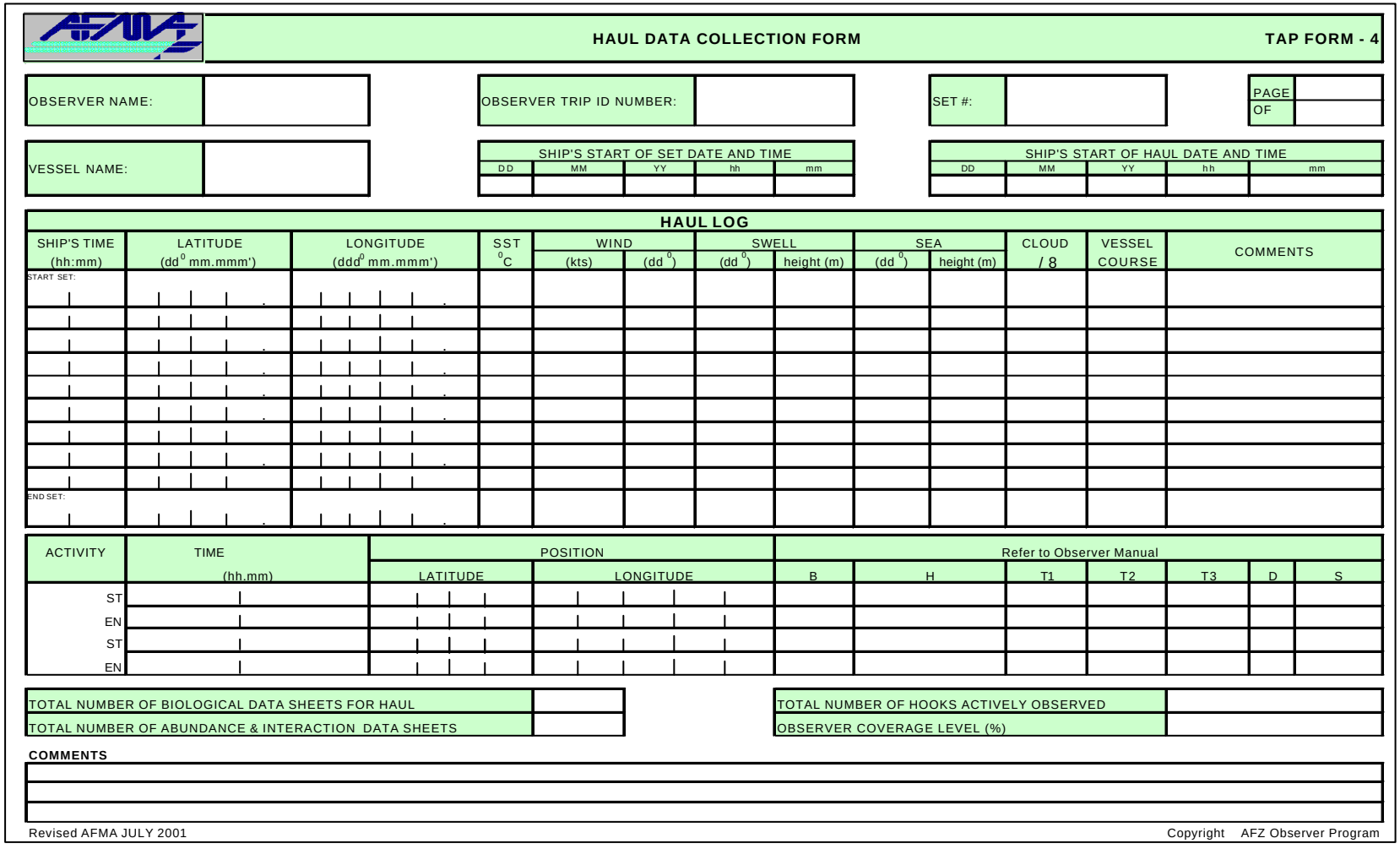
SHIP'S TIME (hh:mm)	LATITUDE (dd° mm.mmm')	LONGITUDE (dd° mm.mmm')	SST °C	WIND (kts)	WIND (dd°)	SWELL (dd°)	SWELL height (m)	SEA (dd°)	SEA height (m)	CLOUD /8	VESSEL COURSE	COMMENTS
START SET:												
END SET:												

COMMENTS (UNUSUAL SET OR BAIT DETAILS)

TOTAL NUMBER OF SEABIRD ABUNDANCE & INTERACTION DATA SHEETS

Revised AFMA JULY 2001

APPENDIX 7 – HAUL DETAILS



HAUL DATA COLLECTION FORM — **TAP FORM - 4**

OBSERVER NAME:		OBSERVER TRIP ID NUMBER:		SET #:		PAGE / OF	

VESSEL NAME:		SHIP'S START OF SET DATE AND TIME					SHIP'S START OF HAUL DATE AND TIME				
		DD	MM	YY	hh	mm	DD	MM	YY	hh	mm

HAUL LOG

SHIP'S TIME (hh:mm)	LATITUDE (dd° mm.mmm')	LONGITUDE (ddd° mm.mmm')	SST °C	WIND (kts)	WIND (dd°)	SWELL (dd°)	SWELL height (m)	SEA (dd°)	SEA height (m)	CLOUD / 8	VESSEL COURSE	COMMENTS
START SET:												
END SET:												

ACTIVITY	TIME (hh.mm)	POSITION LATITUDE	POSITION LONGITUDE	Refer to Observer Manual B	H	T1	T2	T3	D	S
ST										
EN										
ST										
EN										

TOTAL NUMBER OF BIOLOGICAL DATA SHEETS FOR HAUL		TOTAL NUMBER OF HOOKS ACTIVELY OBSERVED	
TOTAL NUMBER OF ABUNDANCE & INTERACTION DATA SHEETS		OBSERVER COVERAGE LEVEL (%)	

COMMENTS

Revised AFMA JULY 2001

APPENDIX 8 – BIOLOGICAL DATA

BIOLOGICAL DATA COLLECTION FORM — **TAP FORM - 5**

OBSERVER NAME:		OBSERVER TRIP ID NUMBER:		SET #:	
VESSEL NAME:		SHIP'S START OF HAUL DATE AND TIME		PAGE	
		DD / MM / YY / hh / mm		OF	

TIME (dd/hh/mm)	SPECIES CODE	HOOK #	TAG/BAND OR SCAR	CONDITION CODE		FATE CODE	LENGTH		WEIGHTS		SEX	SAMPLE		COMMENTS (Gut Contents, Tag #)
				HAULED	LET GO		LCF	TOT	WHOLE (kg)	DRESSED (kgs)	M-F-I-U	#	CODE	

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APPENDIX 9 – WILDLIFE INTERACTIONS DATA FORM

WILDLIFE INTERACTIONS DATA FORM **TAP FORM - 6**

OBSERVER NAME:		OBSERVER TRIP ID NUMBER:		SET #:	

VESSEL NAME:		SHIP'S START OF SET DATE AND TIME					PAGE	
		DD	MM	YY	hh	mm	OF	

OBSERVATION DETAILS

OBSERVATION POSITION:	

VESSEL ACTIVITY (circle)	DODGING	DRIFTING	SETTING	HAULING	STEAMING	SEARCHING

OFFAL DISCHARGE OCCURRING (circle)	YES	NO	DISCHARGE LEVEL (circle)	HIGH	MEDIUM	LOW	NEGLIGIBLE	NIL

High = 70 - 100% offal & bycatch
Medium =40 - 60% offal & bycatch
Low =10 - 30% offal & bycatch
Negligible = 1 - 9% offal & bycatch
Nil = no discharge

BEHAVIOUR & INTERACTION OBSERVATIONS (within 300m of observation position)

TIME	SPECIES	DISTANCE	ATTEMPTS			INTERACTIONS				COMMENTS
(dd/hh/mm)	CODE	(M)	CHASES	LANDINGS	DIVES	CONTACTS	HOOKINGS	ENTANGLED	MORTALITY	

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APPENDIX 10 – WILDLIFE ABUNDANCE DATA FORM

WILDLIFE ABUNDANCE DATA FORM	TAP FORM - 6

OBSERVER NAME:		OBSERVER TRIP ID NUMBER:		SET #:	

VESSEL NAME:		SHIP'S START OF SET DATE AND TIME					PAGE	
		DD	MM	YY	hh	mm	OF	

OBSERVATION DETAILS

OBSERVATION POSITION	

VESSEL ACTIVITY (circle)	DODGING	DRIFTING	SETTING	HAULING	STEAMING	SEARCHING

OFFAL DISCHARGE OCCURRING (circle)	YES	NO	DISCHARGE LEVEL (circle)	HIGH	MEDIUM	LOW	NEGLIGIBLE	NIL

High = 70 - 100% offal & bycatch
Medium =40 - 60% offal & bycatch
Low =10 - 30% offal & bycatch
Negligible = 1 - 9% offal & bycatch
Nil = no discharge

COUNT OF ABUNDANCE (within 300m of observation position)

TIME (hh:mm)		SPECIES CODES	COUNT	COLOUR MARKED		% OF BIRDS				COMMENTS (seabird age or leg band visible etc)
START	END			colour	count	INT S	IRR S	ROM W	TOT D	

Birds Behaviour Codes: INT S - Intensively Searching; IRR S - Irregularly Searching; ROM W - Roaming Widely; TOT D - Totally disinterested

Revised AFMA JULY 2001

APPENDIX 11 – SEABIRD, MARINE MAMMAL & TURTLE MORTALITY REPORT

Seabird, Marine Mammal and Turtle Mortality Report

This mortality report was authored by the observer onboard the F/V _____and outlines the details leading to the capture and subsequent death of a seabird, marine mammal or turtle in the vessel's fishing gear. All times are in ships time (UTC + ___).

NAME OF VESSEL:	
CALLSIGN:	
DISTINGUISHING SYMBOL:	
DATE OF CAPTURE:	
SKIPPER:	
ESTIMATED TIME OF CAPTURE:	
LOCATION OF CAPTURE:	
LOCATION NAME:	
WEATHER AND SEA CONDITIONS AT TIME:	
SPECIES OF SEABIRD, MARINE MAMMAL OR TURTLE:	
DISTINGUISHING FEATURES:	
FISHING ACTIVITY (SET / HAUL) DETAILS:	

FISHING GEAR DETAILS:	
TAGS, BANDS OR BRANDS PRESENT:	
DESCRIPTION OF THE INCIDENT:	
ACTIVITY OF THE BOAT AT THE TIME THE INCIDENT OCCURRED:	
STEPS THAT HAVE BEEN TAKEN TO PREVENT A RECURRENCE OF THE INCIDENT:	
PHOTO, VIDEO TAKEN (YES / NO)	
SEABIRD RETAINED (YES / NO)	

Attachment A

Extract from Report of Fifth Meeting of the Scientific Committee (Attachment D): Report of the SC to CCSBT on the Scientific Research Program

Scientific Observer Program

Scientific Observer Programs are internationally accepted as an essential component in any fisheries management system and will be a key element of a SRP for CCSBT.

Information that should be collected by scientific observers includes:

1. Details of effort to aid the interpretation and standardisation of CPUE data, including:
   - Amount of gear used and technical details of gear
   - Position of fishing activity
   - Date and time of fishing activity
2. Details of the catch, including:
   - Catch composition (number and length or weight for SBT, other tuna and tuna like species)
   - Catch retained and discarded
3. Length, weight, sex and other biological data for SBT
4. Otoliths of SBT for age determination
5. Monitoring of tag recoveries
6. Environmental data that may influence SBT CPUE (sea surface temperature, wind direction and speed, etc.)
7. Research duties – qualified observers may collect detailed reproductive samples, and tag fish as practical and appropriate etc.

The following principles should govern the implementation of an observer program for CCSBT

1- The SC recommends an observer coverage of 10% for catch and effort monitoring as a target level.

2- The appropriate level of observer coverage for estimation of tag returns will depend on the scale of the tagging program and the tag recovery rate. The trade-off between more intensive observer coverage and more intensive tagging will need to be explored in planning the tagging program.

3- CCSBT shall prepare standards for training of observers, operation of observer programs and the data to be collected including the forms to be used.

4- The CCSBT Secretariat shall work with observer coordinators in member countries to assure that the data collected becomes part of the CCSBT data base as agreed in CCSBT protocols.

5- Member countries will be responsible for operation of observers in high seas and domestic EEZ fisheries on their flag vessels.

6- All fleet components should be observed and target levels of observer coverage should be the same for all fleet components.

7- In the interests of maintaining consistency between fleets and increasing mutual trust in the results of the observer program, exchange of observers between countries on a regular basis and recruiting some observers from non-member nations should be encouraged.

Attachment B

Report of Fifth Meeting of the Scientific Committee (Attachment F):

Initial Draft Outline for a CCSBT Scientific Observer Program

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From the SC Report *"Implementation of a scientific observer program was accorded the same priority as implementation of a conventional tagging program. A set of principles for design of such a program was proposed. While member countries should be responsible for implementation, the Commission should set standards for both training and data collection, and the resultant data should be submitted to a central CCSBT database coordinated by the Secretariat."*

In the interim, the Secretariat compiled a survey of observer programs around the world and presented a summary of results in document SC/0108/07. They provided some schedules and responses and outlined the Observer Program endorsed by the Commission. The purpose of this document is to develop further a set of draft standards for a scientific observer program to be coordinated by the CCSBT. These aspects are presented below in outline form.

Main Characteristics of a Scientific Observer Program

1.1 Description of the Observed Fishery

- Nationalities/flags of vessels.
- Information on vessel characteristics and power factors (e.g. length, GRT, hold capacities, instrumentation are required).
- Gear configuration and deployment methods (e.g., gear used, net or line types, depths fished, baits used).
- General areas fished.
- Target species.

1.2 Observer Program Coverage

- All SBT fishery components (fleets) should be observed and target levels of observer coverage should be the same for all fleet components.
- The extent of observer coverage depends on the goals of the program. In general, if sampling is truly "random," the percentage coverage can be quite low. Unfortunately fishing vessels are notoriously poor platforms for random sampling. Therefore, vessel coverage needs to be relatively high, particularly if data are to be broken down into different geographic strata.
- There needs to be a process to determine the appropriate level of observer coverage, particularly with regard to the level of observation required for determination of tag reporting rates.
- The issue of observer coverage is one that should be evaluated at appropriate intervals, particularly if new goals or programs requiring different levels arise
- An added concern about lack of coverage is the potential for bias. Increasing coverage evenly across different fleets and within fleets operating in different periods or areas would be an important component. This requirement also tends to increase the level of coverage needed.

- One approach towards efficiency in sampling practices for observers is to have the ability of observers to rotate among vessels within a season. This may be impractical but may be one way to improve the efficiency of limited sampling resources.

1.3 Effort Data

- Depending on the type of information, a standard record-keeping method needs to be established.
- To the extent practical, obtain comprehensive estimates of the effort expended.
- Effort should be recorded to the actual location of operations (set time, end and start points etc.).
- Characteristics of fishing operations (any special attributes, e.g., associations of a school, curved vs. straight-line sets, etc.).

1.4 Catch and By-Catch Data

- Record number and weight of animals caught (including target and by-catch species).
- Report the observed percent of the estimated catch relative to the total catch of each fishing operation. I.e., the observed catch over the total vessel catch, by species. This provides some indication of the within-vessel sampling levels (recognizing that in many cases, there might be 100% coverage of the catch).

1.5 Size-Composition Data

- For the purposes of SBT analyses, accurate size measurements of SBT are required. These should be done to ensure within strata randomness. For example, for large numbers of fish caught in a single operation (e.g., a purse seine vessel) a systematic sampling may be appropriate (i.e., sub-sampling catches throughout the brailing process).
- Effort should be made to measure other species as required by co-operative interests of other organizations and nations.
- The actual number of fish should be spread throughout as many separate fishing operations as possible. For example, it is nearly always the case that sampling 20 fish (randomly) from 10 operations is much better than sampling 200 fish from every 10^{th} operation. As noted above in the section on observer coverage, the required actual number of samples should be re-evaluated from time to time and as needs change.

1.6 Biological Sampling

- Observers will be expected to conduct biological sampling. For example, sampling for otoliths, tissues for genetic analyses, length and weight, food habits, and gonad status are commonly routine.
- As with the size composition information, the frequency and intensity of sampling needed will vary with requirements of individual studies.

1.7 Environmental Information

- Sea surface temperature, wind, swell, and weather conditions.

- Special projects (e.g., CTD casts etc).
- Where appropriate, collect information on responsible fishing practices (e.g., retrieval of lost gear). Of course this activity is anticipated only to the extent that it does not interfere with normal activities and only deals with improving scientific aspects of data collection (i.e., perhaps for other species).

1.8 Interaction with Tagging Programs

- Monitoring tag recoveries during observer trips.
- Providing publicity among the fleet in addition to observed vessel.
- Assist with reward systems and promote incentives.
- Where appropriate, observers may conduct tagging.
- Participate in tagging experiments such as tag-seeding for better appreciation of reporting rates.
- Interaction as needed for archival tagging programs.

1.9 Observer Qualifications

- University graduates or technically trained personnel, as considered appropriate for the fleets concerned, with interests related to fisheries.
- Ability to work at sea in difficult conditions.
- Ability to work alone under stressful psychological situations.

1.10 Observer Training

- Training in fishery management and biological field collection programs including species identification, data collection and sampling procedures.
- Regular training including safety at sea and first aid.
- Training in protocols for dealing with difficult situations (personal conflicts and physical hazards).
- Holding regular workshops where programs can exchange approaches and experiences and improve consistency in the data collection process. This recognizes that absolute consistency, while desirable, is unlikely given different observer programs currently in place.

1.11 Standardization of Observer Programs across Fleets and Fisheries

It is essential to ensure that data and information collected are comparable across fisheries.
Development of a common training procedure.
Suggest that a CCSBT observer program co-ordinator be identified to work with national program co-ordinators to develop a training course and material, and participate in training courses. This co-ordinator would also conduct briefings and de-briefings with observers to ensure functions as planned, and to provide feedback on improvements.
Regular exchange of observers among the different fisheries should be encouraged.

Attachment 8

November 27, 2001
Japan

Future Research for Ecologically Related Species (Preliminary Proposal)

Ecological Related Species Working Group (ERSWG) established under Commission for the Conservation of Southern Bluefin Tuna has worked on ERS since 1995, under the terms of reference (TOR, see Appendix 1). However, its work was concentrated and limited to bycatch of SBT fisheries and seabird bycatch mitigation measures, which is insufficient for the ERSWG to fulfill the TOR..

The TOR defines two types of ERS as follows:
1. Species (both fish and non-fish) which may be affected by SBT fisheries operations;
2. Predators and pray species which may affect the condition of the SBT stock.

The work which has been done to date was only related to the ERS described in the 1st definition. In order for the ERSWG to work fully, the WG has to start working on the ERS described in the 2nd definition.

Moreover, considering 1) the objectives of the Convention, which are "conservation" and "optimum utilization" of southern bluefin tuna (SBT), 2) the current situation of SBT stock and 3) information which could indicate drastic decrease of recruitment resent years, the need to investigate the pray/predators of SBT and pray competition with other high trophic predators (HTPs) should be emphasized in order to find the possible adverse effect caused by these species and possible measures to address this issue.

Also, in the international fisheries related discussion, ecosystem management approach has been considered more and more important aspect for management of living marine resources.

Taking into consideration of situation mentioned above, it is recommended that the researches which address the following aspects should be planned and conducted:

1) Research on pray species of SBT
- Research on stomach contents of SBT in various stages, including pre-recruitment stage
- Review on effect of pray species' abundance on SBT stock, especially before recruitment

2) Research on pray competition between SBT and other high trophic predators (HTPs)
- Identification of HTPs, which may have pray competition with SBT, including pre-recruitment stage

- Identification of their foods.
- Identification of their ecological relationship with SBT.

3) Research on predators of SBT
- Identification of predators especially for larval and juvenile stages of SBT.
- Identification of their ecological relation ship with SBT.

4) Research on predation of longline caught SBT
- Identification of predator species which damage on SBT
- Identification of level of predation

Note: Research should not limited to the above items.

Revised "Research Priority" and "Operational Framework" are also proposed based on the same idea.

Attachment 5

Research Priorities for Mitigation Measures and Other Research on ERS

The ERSWG, at its 3rd meeting, prepared a summary of existing and potential seabird by-catch mitigation research in table form, for endorsement by the Commission. The table highlighted the research then underway by the three parties (Australia, Jpan and NZ), and helped identify possible areas of collaboration. It was recognised that each party was likely to have different research priorities because of differences between fleets. For this reason, the priorities for each party were shown separately.

The table should be treated as a guide only, and needed to remain flexible. New ideas or results of research are likely to alter country priorities over time.

ERSWG4 updated research needs and their priorities which are being undertaken by parties outside the Commission and which may be of interest to the three countries for mitigation of seabird by-catch as included in the table attached.

ERSWG also identified researches needed to facilitate to understand other ecologically related species including pray and predator species which may affect the condition of the SBT stock in order to achieve the objectives of the Convention for the Conservation of Southern Bluefin Tuna, which is "conservation and optimum utilization of SBT." These researches are also included in the table attached.

Japan's revised proposal on " Research Priorities for Mitigation Measures "

ERSWG RESEARCH PRIORITIES FOR MITIGATION MEASURES AND OTHER RESEARCH ON ERS

Mitigation Measure	Research Need(s)	Method	Country undertaking Research	Member Priorities (high, medium, low)			Opportunities for Collaboration	Past ERSWG Papers	Timeframe for Input to ERSWG
				Japan	NZ	Australia[1]			
Presently Used									
Night setting	• effect on SBT-CPUE	• analyse existing databases, at sea experiments,	Australia Japan NZ	high	high	high	• 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	ERSWG 4
	• effect on non-target fish	• analyse existing databases	-	med	low	med			
	• effect of light levels on seabird capture (e.g. moon, cloud)			med	med	med			
	• ways to minimise hazards to crew			high	low	low			
	• effect of night setting on crew efficiency			high	low	low			
Bait-casting machine	• effectiveness in combination with tori line	• at sea experiments	-	med	low	low	• input from fishers • designing experiment • technical advice • sharing analyses	95/14, 9806/17, 9806/25	
	• effectiveness of different models	• at sea experiments	-	med	low	med			
Line weighting (mainline and snoods)	• optimum weighting and position of weights for different gear	• at sea experiments	Australia Taiwan Japan	med	med	high	• input from fishers • designing experiment • technical advice • sharing analyses	95/33, 95/39, 9806/12	ERSWG 4
	• Effect on SBT CPUE		-	med	med	med			
	• ways to minimise hazards to crew	• gear modifications or changes to haul operation	USA (Hawaii)	high	med	low			
Colouring baits	• identification of a short-lasting dye	• trials with existing dyes	USA (Hawaii)	**High**~~low~~	low	low	• input from fishers • designing experiment • technical advice		
	• effectiveness in reducing seabird captures	• at sea experiment		**High**~~low~~	low	low			

		• effect on SBT CPUE **· cost reduction**	• at sea experiment • trials with farmed tuna **· cooperation with maker**	- -	**High**~~low~~	low	low	• sharing analyses		

Mitigation Measure	**Research Need(s)**	**Method**	**Country Undertaking Research**	**Country Priorities (high, medium, low)**			**Opportunities for Collaboration**	**Past ERSWG papers**	**Timeframe for Input to ERSWG**
	•	•		Japan	NZ	Australia	•		
Tori lines	• most effective design for different fleets	• at sea experiments	Japan Australia New Zealand USA (Hawaii)	high	high	high	• 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	ERSWG 4
Sound deterrents	• effectiveness in reducing seabird captures	• at sea experiments	Japan Australia NZ	low	low	low	• input from fishers • designing experiment • technical advice • sharing analyses		
Under Development									
Underwater setting	• development of technology	• development of technology	NZ Australia USA (Hawaii)	med	high	high	• joint funding between New Zealand and Australia • input from fishers • designing experiment	95/6, 9706/13, 9706/17, 9706/18, 9806/32	ERSWG 4
	• best position to place baits	• at sea experiments	Japan Australia NZ	med	high	high	• technical advice • sharing analyses		
		• advice from hydro-engineers	Australia						
	• effectiveness in reducing seabird captures	• at sea experiments	NZ	med	high	high			

Water cannon	• effectiveness in reducing seabird captures	• at sea experiment	Japan	low	low	low	• input from fishers • designing experiment • sharing analyses • technical advice		
Potential									
Smart hooks	• development of a hook that becomes "armed" below a pre-determined depth	• development of technology	Australia	low	low	low	• input from fishers • designing experiment • sharing analyses • technical advice		
	• effect on SBT CPUE	• at sea experiments	-	low	low	low			
	• effectiveness in reducing seabird captures	• at sea experiments	-	low	low	low			

Japan's revised proposal on " Research Priorities for Mitigation Measures "

Mitigation Measure	**Research Need(s)**	**Method**	**Country Undertaking Research**	**Country Priorities (high, medium, low)**			**Opportunities for Collaboration**	**Past ERSWG papers**	**Timeframe for Input to ERSWG**
				Japan	NZ	Australia			
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	Australia - - -	low low low	low low low	high high high	• input from fishers • designing experiment • sharing analyses • technical advice		
Hook modifications	• effect of existing hook designs on capture of seabirds • 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	• input from fishers designing • experiment • sharing analyses • technical advice		
Other Research on ERS									

Research on by-catch by purse seine fishery	· Observation on bycatch of non-SBT species, including dolphins	· at sea observation	Countries which has purse seine fishery	N/A	?	?	sharing analyses		ERSWG5
Mitigation Measure	**Research Need(s)**	**Method**	**Country Undertaking Research**	**Country Priorities (high, medium, low)**			**Opportunities for Collaboration**	**Past ERSWG papers**	**Timeframe for Input to ERSWG**
				Japan	NZ	Australia			
Pray species of SBT	· Research on Stomach contents of SBT, in various stages · before recruitment	· Collection of stomach contents and their analysis · Sampling of juvenile SBT before recruitment and analysis of their stomach contents · Identification of major pray species of SBT before recruitment and review on effect of their abundance to SBT stock	Australia, Japan, NZ Australia? Australia?	high	 ? ?		sharing analyses sharing analyses sharing analyses		ERSWG5

Pray competition between SBT and other high trophic predators (HTPs)	· Identification of such HTPs · Identification of their foods · Identification of their ecological relationship with SBT	· at sea observation and/or sampling · analysis of stomach contents	Australia, Japan, NZ				sharing analyses		ERSWG5
Predators of SBT	· Identification of predators especially for larval and juvenile stage of SBT · Identification of their ecological relationship with SBT	· at sea observation and/or sampling · analysis of stomach contents	Australia				sharing analyses		ERSWG5
Predation of long line caught SBT	· Identification of level of predation	· at sea observation	Australia, Japan, NZ	high			sharing analyses		ERSWG5
Mitigation Measure	**Research Need(s)**	**Method**	**Country Undertaking Research**	**Country Priorities (high, medium, low)**			**Opportunities for Collaboration**	**Past ERSWG papers**	**Timeframe for Input to ERSWG**
				Japan	NZ	Australia			
Adverse effects of other human activities than fishing to SBT stock	· Identification of human activities which may affect SBT stock, especially during larval and juvenile stage	· survey of human activities on the coast	Australia, (Indonesia)				· Input from other industries		ERSWG5

1. The assignment of low priority to issues dealing with crew safety relates to Australia's comment on the likelihood of crew safety being an issue in relation to the use of these mitigation measures. Existing mechanism place considerable emphasis on crew safety issues.

Japan's revised proposal on " ERS operational framework "

Commission Requirements (Broad Areas of Work)	Relevant Terms of Reference	Research Questions/ Objective	Input	ERSWG Process	Outputs	Time Frame	Status	Notes
CURRENT WORK PRIORITIES FOR THE ERSWG								
A) Assessment of ERS interactions with SBT fisheries	2 a 3 a)iii)	1) Provision of estimates of incidental seabird take in SBT fisheries	Relevant sections from members' annual reports to the ERSWG, scientific papers and/or data as appropriate	Each member provides necessary papers and/or data in electronic format to the Secretariat for distribution three weeks in advance of the ERSWG. An agenda item at the ERSWG is dedicated to review of the papers presented and/or analyses of data and the development of a section for inclusion in the report to the Commission.	Report from ERSWG to Commission which synthesises information provided by the three members, provides advice on, and identifies, areas of further research and cooperation, including potential mitigation measures.	ERSWG 4	Annual and ongoing	ERSWG/proj/A.1

Japan's revised proposal on " ERS operational framework "

Commission Requirements (Broad Areas of Work)	Relevant Terms of Reference	Research Questions/ Objective	Input	ERSWG Process	Outputs	Time Frame	Status	Notes
	To be included	2) What factors influence seabird captures in SBT fisheries?	Relevant sections from members' annual reports to the ERSWG, scientific papers and/or data as appropriate	Each member provides necessary papers and/or data in electronic format to the Secretariat for distribution three weeks in advance of the ERSWG. An agenda item at the ERSWG is dedicated to review of the papers presented and/or analyses of data and the development of a section for inclusion in the report to the Commission.	Advice on key factors which influence seabird bycatch, those factors warranting further investigation and, potential mitigation measures	ERSWG4	—	ERSWG/proj/A.2

Japan's revised proposal on " ERS operational framework "

Commission Requirements (Broad Areas of Work)	Relevant Terms of Reference	Research Questions/ Objective	Input	ERSWG Process	Outputs	Time Frame	Status	Notes
B) Development and Assessment of Effectiveness of Mitigation Measures	To be included	1) How can the design and deployment of tori lines be optimised to minimise seabird captures? **2) Development of blue dyed bait** 3) **Research on effect on SBT-CPUE of night setting**	Relevant sections from members' annual reports to the ERSWG, scientific papers and/or data as appropriate and information from fishers	Each member provides necessary papers and/or data in electronic format to the Secretariat for distribution three weeks in advance of the ERSWG. An agenda item at the ERSWG is dedicated to review of the papers presented and/or analyses of data and the development of a section for inclusion in the report to the Commission.	Advice on amendments or improvements to the guidelines for tori pole design and deployment (ERSWG3 Attachment 6)	ERSWG4	—	ERSWG/proj/B.1

Japan's revised proposal on " ERS operational framework "

Commission Requirements (Broad Areas of Work)	Relevant Terms of Reference	Research Questions/ Objective	Input	ERSWG Process	Outputs	Time Frame	Status	Notes
C) ERS Interactions with SBT	2b	**1) Research on pray species of SBT** **Research onstomach contents of SBT in various stages, including pre-recruitment stage.** **Review on effect of pray species' abundance on SBT stock, especially pre-recruitment stage.**	Relevant sections from members' annual reports to the ERSWG, scientific papers and/or data as appropriate	Each member provides necessary papers and/or data in electronic format to the Secretariat for distribution three weeks in advance of the ERSWG. An agenda item at the ERSWG is dedicated to review of the papers presented and/or analyses of data and the development of a section for inclusion in the report to the Commission.	Report from ERSWG to Commission which synthesises information provided by the three members, provides advice on, and identifies, areas of further research and cooperation	ERSWG5	Annual and ongoing	ERSEG/proj/C.1

Commission Requirements (Broad Areas of Work)	Relevant Terms of Reference	Research Questions/ Objective	Input	ERSWG Process	Outputs	Time Frame	Status	Notes
		2) Pray competition between SBT and other high trophic predators (HTPs) **Identification of HTPs, which may have pray competition with SBT, including pre-recruitment stage.** **Identification of their foods.** **Identification of their ecological relationship with SBT.** **3) Predators of SBT** **Identification of predators especially for larval and juvenile stages of SBT.** **Identification of their ecological relation ship with SBT.**						

Commission Requirements (Broad Areas of Work)	Relevant Terms of Reference	Research Questions/ Objective	Input	ERSWG Process	Outputs	Time Frame	Status	Notes
		4) Predation of long line caught SBT **Identification of predator species which damage on SBT** **Identification of level of predation**						
D) Education and Public Relations		1) Promote awareness of ERS issues to fishers **2) Promote awareness of appropriate use of tori lines**	Secretariat to work with key contacts to develop framework and draft text for pamphlet using existing resources such as those outlined in ERSWG3 Attachment 8	Circulate draft framework and text for pamphlet three weeks prior to the ERSWG4. An agenda item to develop a pamphlet provided at ERSWG4	Draft text for a CCSBT pamphlet	ERSWG4	—	ERSEG/proj/D.1

Commission Requirements (Broad Areas of Work)	Relevant Terms of Reference	Research Questions/ Objective	Input	ERSWG Process	Outputs	Time Frame	Status	Notes
FUTURE WORK AREAS OF HIGH PRIORITY FOR ERSWG								
E) Proposals for Future Research or Activities[1]			Research plan(s) Results of the review of scientific papers	Review of research plans	Recommend ations to the Commission Research questions/or proposals		Annual	.

[1] Once a research proposal under 5) is agreed by the ERSWG and CCSBT, the relevant research question or objective from the proposal would move up into current work priorities section of the table.

Appendix 1

Working Group on Ecologically Related Species (ERS)

Terms of Reference

1. The Ecologically Related Species Working Group will report to the Commission through the Scientific Committee. The Scientific Committee may provide comments to the Commission on the reports (including advice and recommendations) of the Ecologically Related Species Working Group.

2. To provide information and advice on issues relating to species associated with southern bluefin tuna (SBT) (ecologically related species), with specific reference to:
   a) species (both fish and non-fish) which may be affected by SBT fisheries operations;
   b) predator and prey species which may affect the condition of the SBT stock.

3. (a) With respect to species identified in 2 a) above, to monitor trends and review existing information and relevant research, including but not limited to studies on:
      (i) the population biology of ecologically related species;
      (ii) the identification of factors affecting populations of ecologically related species;
      (iii) the assessment of the SBT and other fisheries effects on ecologically related species and of the proportion of the SBT and other fisheries effects to the overall effects;
      (iv) modification to gear and operational aspects of the SBT fishery to minimise the effects on ecologically related species
   (b) With respect to species identified in 2 b) above, to monitor trends and review existing information and relevant research, including but not limited to studies on:
      (i) the population biology of ecologically related species;
      (ii) the identification of factors affecting population of ecologically related species;
      (iii) the assessment of the effects of ecologically related species on the condition of the SBT stock

4. To provide recommendations on data collection programs and research projects with respect to species and issues identified in 2 above, including recommendations on research priorities and estimated costs of such research.

5. To provide advice on measures to minimiase fishery effects on ecologically related species, including but not limited to gear and operational modifications.

6. To provide advice on other measures which may enhance the conservation and management of ecologically related species.

7. To review these terms of reference and to recommend to the Commission changes as and when appropriate.

8. To co-operate and liaise with relevant experts, scientists (from Convention parties and elsewhere) and inter-governmental and non-governmental organisations, in data collection and analysis on ecologically related species subject to the provisions of the data handling criteria (Annex1).

9. To respond to requests for advice on specific matters from the Commission.

Attachment 9

DRAFT AGENDA
CCSBT – 5th Meeting of Ecologically Related Species Working Group
(Date and Venue to be determined)

1. Opening

   (i) Election of the Chair
   (ii) Adoption of the Agenda

2. Reports

   (i) Member reports (activities undertaken since last meeting in November 2001)
   (ii) Non-members reports

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:

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

   (b) predator and prey species which may affect the condition of the SBT stock

6. Education and public relations activities

7. Update of 'Research Priorities for Mitigation Measures' (ERSWG 4 Attachment 5)

8. Update of 'ERSWG Operational Framework (ERSWG 4 Attachment 6)

9. Proposals for future research activities

10. Future work program
    (i) Draft Agenda for the next ERSWG meeting
    (ii) Inter-sessional work

11. Other business

12. Conclusion
    (i) Adoption of meeting report
    (ii) Recommendation of timing of next meeting
    (iii) Close of meeting

Attachment 10

Outline for Member's Annual Report to ERSWG
(Revised edition by ERSWG4)

1. **Introduction**
   General comments on fishing methods by which southern bluefin tuna is caught in party fisheries (by fleet, area, and time).
   General comments on type and magnitude of ERS caught by fishery/method.
2. **Review of SBT Fisheries**
   Fleet size and distribution
   Brief summary of trends
   Distribution of Catch and Effort
   Summary of catch and effort by area and fleet
3. **Fisheries Monitoring for Each Fleet**
   Summary of recent observer coverage of SBT fisheries fleets and summary of data collection activities of observers. Summary of data collection activities from non observed activities.
4. **Seabird**
   Summary of cpue and total numbers of seabird incidentally caught by area and fleet and list of numbers of each seabird species observed caught. Summary of seabird capture from non observed sources.
5. **Other Non-target Fish**
   Summary of cpue and total numbers of shark and the predominant non-target fish species by area and fleet.
6. **Marine Mammal and Marine Reptile**
   Summary of total numbers of marine mammal and marine reptile incidentally caught.
7. **Mitigation Measures to Minimise Seabird and Other Species Bycatch**
   Current Measures
   Mandatory Measures for Each Fleet
   * Description of each measure
   * Compliance Monitoring System (i.e. how is compliance measured)
   * Level of Compliance for each measure

   Voluntary Measures for Each Fleet
   * Description of each measure
   * Proportion of fleet using each measure and how this proportion was determined

   Measures under Development/Testing
   * Description of each measure being developed and tested
   * Lead agency undertaking research
   * Description of any collaboration
   * Results to date
   * Planned development/testing for next year
   * Expected completion date and report to ERSWG

8. Public Relations and Education Activities

Public Relations Activities

* media releases
* information booklets, posters, other written material
* video
* public presentations
  - trade shows
  - forums, conference
  - school/university group

Education

* crew training, especially ship masters
* trainee fishers
* engineers
* managers
* observers

Information Exchange

* research
* educational materials
* other regional fisheries organisations
* international organisations
* non-member states and entities
* review of new ideas obtained from crew debriefings or ship fishing reports.

9. Information on other ERS (non-bycatch) such as prey and predator species

10. Others

Information obtained concerning ERS related fishing activities of non-party fleets.