



CCSBT-ERS/2203/05

## Information from the Compliance Committee

### Introduction

This paper provides information and correspondence from the Compliance Committee that is relevant to the Ecologically Related Species Working Group (ERSWG). It contains four items of information:

1. Extract of relevant ERS paragraphs from the Report of the Sixteenth Meeting of the Compliance Committee;
2. Members' responses to the question raised at the Compliance Committee of whether reports of night setting mean the entire set was conducted at night;
3. Possible changes to CCSBT's High-level Code of Practice for Scientific Data Verification, to include cross-verification of different sources of mitigation data such as observer and logbook data; and
4. Information provided in Members' annual reports to the Compliance Committee on the Types of Information Collected on Bycatch Mitigation Measures.

### (1) Extract of relevant ERS paragraphs from the Report of the Sixteenth Meeting of the Compliance Committee

The CCSBT Compliance Committee (CC) met from 5-7 October 2021. Some aspects of that meeting are relevant to the ERSWG and the relevant paragraphs from the CC meeting report are provided at **Attachment A**. This includes: discussion of observer coverage and use of mitigation measures by Members; observed reductions in seabird mortalities; discussion of electronic monitoring systems (EMS) and a planned exchange of EMS technical information at a Technical Compliance Working Group meeting in October 2022; and an update on the planned project for Enhancing the Implementation of Ecologically Related Species Seabird Measures within CCSBT Fisheries.

Please note that Japan has submitted revised ERS data since CC16 above. These corrected data show an increased use of two or more mitigation measures by Japan in 2020 over that reported in Attachment 2 of [CCSBT-CC/2110/05](#). The revised information is provided below. The information for 2018 and 2019 is unchanged from that in CCSBT-CC/2110/05.

Member	Fleet	Year	Tori pole + Night setting only	Tori pole + weighted branchline only	Night setting + weighted branchline only	Tori pole + night setting + weighted branchline	None	Single Measure (unspecified)	Night setting only	Tori pole only	Weighted branchline only	Other
JP	JPD	2018	21.3%	-	-	-	-	78.7%	-	-	-	-
		2019	12.7%	10.2%	0.3%	3.0%	-	-	1.0%	66.7%	0.9%	2.9%
		2020	32.9%	17.9%	1.3%	14.0%	-	-	0.1%	29.2%	4.7%	-

**(2) Members’ responses to the question raised at the Compliance Committee of whether reports of night setting mean the entire set was conducted at night**

A question was raised at the CC meeting on the interpretation of night setting reported by Members and whether Members reports of night setting means the entire set was conducted at night. The Secretariat has contacted Members about this question and the responses received so far are listed below:

Member	Member’s response
Australia	We take 6:00 as the cut off. If the start set time is between 6:00pm and 6:00am, we say it’s a night shot.
Japan	The night setting coverage reported by Japan, as explained in previous ERSWG meetings, is based on the number of hooks actually set during night (to be confirmed as “night setting”)
Taiwan	In our understanding, the “night setting” means no setting between nautical dawn and before nautical dusk.
New Zealand	The research provider that collates our data uses the <a href="#">CCAMLR Dawn/Dusk Calculator</a> to assign SLL events as night sets. i.e. when a SLL event falls into the definition of ‘night set’ as determined by the CCAMLR calculator. They only use start event data (datetime / lats and longs). If a SLL event meets the criteria for a night set, then the entire set (all hooks) is considered a night set. So the answer <i>[to the question of does the night set proportion include only when an entire set is made at night]</i> would be... no, not necessarily, as we can’t determine if a SLL events that starts as a night set remains a night set by the end of setting the line.
Korea	When Korea reports using night setting as a mitigation measure, it means that the whole process of setting was conducted at night. i.e setting commenced after sunset, and ended before sunrise. If setting commenced before sunset or continued after sunrise, it is not considered a night setting. We are confirming whether a setting is a night setting or not based on observer's reports which include starting/ending time of setting.

The responses received suggest that some Members (Japan, Korea and Taiwan) report night setting for only those hooks set at night, whereas for the other Members’ reports of night setting could include hooks that were set during daylight hours.

The use of night setting as a mitigation measure requires no setting to be conducted between nautical dawn and before nautical dusk. Consequently, Members that have not reported in this manner are encouraged to revise their ERSWG data submissions (including past submissions) to match the definition of night setting for mitigation purposes.

**(3) Possible changes to CCSBT’s High-level Code of Practice for Scientific Data Verification, to include cross-verification of different sources of mitigation data such as observer and logbook data.**

During the Compliance Committee meeting, there was a comment regarding verification of mitigation data. The Secretariat noted that the CCSBT has a High-level Code of Practice for Scientific Data Verification, which could be updated to include cross-verification of different sources of mitigation data such as observer and logbook data. A draft update to the Code of Practice is provided at **Attachment B** for the ERSWG’s consideration. The updates are shown as tracked changes.

**(4) Information provided in Members’ annual reports to the Compliance Committee on the Types of Information Collected on Bycatch Mitigation Measures**

The Eleventh meeting of the Ecologically Related Species Working Group (ERSWG 11) requested that the Compliance Committee collate information from Members on the types of information collected on bycatch mitigation measures under compliance programs for SBT vessels (e.g. port inspections and other monitoring and surveillance programs). In response to this request, the October 2015 meeting of the Compliance Committee added the following section to the annual reporting template for the Compliance Committee and Extended Commission.

*“(d) Monitoring usage of bycatch mitigation measures:*

- i. Describe the methods being used to monitor compliance with bycatch mitigation measures (e.g. types of port inspections conducted and other monitoring and surveillance programs used to monitor compliance). Include details of the level of coverage (e.g. proportion of vessels inspected each year):*
- ii. Describe the type of information that is collected on mitigation measures as part of compliance programmes for SBT vessels:”*

The information provided to the Compliance Committee in the following years has been reported to subsequent meetings of the ERSWG. The information provided to the Compliance Committee in 2021 is provided below for the ERSWG’s information.

This information overlaps with the information specified in section 7 of the template for the Annual Report to the ERSWG, which requires reporting of the “*Compliance Monitoring System (i.e. how is compliance measured)*” for mitigation measures and the “*Level of Compliance for each [mitigation] measure*”.

	<b>Methods being used to monitor compliance with bycatch mitigation measures, including coverage level</b>	<b>Type of information collected</b>
Australia	<p>Australia uses a number of methods to monitor compliance, including compliance with bycatch mitigation measures. These methods include electronic monitoring, observer reports, vessel monitoring system, aerial surveillance, at sea inspections and port inspections.</p> <p>Australian fisheries officers conduct inspections of landings at key SBT ports, as well as at sea boarding’s and inspections of boats taking SBT in the longline and farm sectors. In 2019/20 Australian fisheries officers conducted 31 SBT inspections, 10 at sea and 21 in port.</p>	<p>The information collected on mitigation measures includes;</p> <ul style="list-style-type: none"> <li>• whether bycatch mitigation, such as tori lines, is being carried on board the vessel,</li> <li>• whether bycatch mitigation has been deployed appropriately</li> <li>• whether the bycatch mitigation complies with specifications.</li> </ul>
EU	<p>The EU has no SBT fisheries. However, mitigation measures in force in other tRMFOs have been implemented.</p>	<p>The EU has no SBT fisheries. However, mitigation measures in force in other tRMFOs have been implemented.</p>
Indonesia	<p>Inspection by surveillance officer, report from observer on board, port sampling program.</p>	<p>Species identification, length, weight, geographical location, condition when caught and release, and sex.</p>

	<b>Methods being used to monitor compliance with bycatch mitigation measures, including coverage level</b>	<b>Type of information collected</b>
Japan	Inspection of Japanese fishing vessels registered with the CCSBT through vessel radio communication and visual confirmation relevant to bycatch mitigation measures had been conducted by monitoring and control vessel (MCV). During the 2020/2021 fishing season, no inspection of Japanese fishing vessels registered with the CCSBT was conducted, because MCV was not dispatched to the Southern hemisphere for more urgent monitoring and inspection needs within Japan's EEZ.	Fishers have been mandated to write down seabird bycatch mitigation measures applied to their operations in the logbook since 2014.
Korea	Bycatch mitigation measures used are observed and monitored through the scientific observer program and the electronic reporting system.	The information includes sea bird mitigation measures used for reducing its bycatch and data on ERS interaction.
New Zealand	<p>Compliance with these measures is monitored through at-sea and in-port inspections by Fisheries Officers, aerial surveillance from military aircraft, and the placement of observers on board vessels. Observer reports indicating problems with use of mitigation equipment are prioritised for follow-up with vessel operators. These are then followed up by Fishery Officers. Additionally, new electronic reporting requirements that will come into effect in 2021 will require additional reporting for the surface longline (SLL) fleet on seabird mitigation measures and line weighting regimes.</p> <p>During the 2020 calendar year, inspections of vessels in port found incidents where breaches of seabird mitigation regulations occurred. The majority of these breaches were in relation to tori lines not meeting specifications as per domestic law. A graduated enforcement was applied to this noncompliance, ranging from commercial advice and aiding fishers to bring seabird mitigation up to specification, through to conviction of one vessel for failure to deploy seabird mitigation.</p>	<p>Fisheries Officers collect information about tori line, line-weighting and hook shielding devices that are present on vessels. For each vessel that uses a tori line, a 'tori line details' form is filled out which records information on:</p> <ul style="list-style-type: none"> <li>• Tori line total length</li> <li>• Attachment point</li> <li>• Aerial extent</li> <li>• Number of streamers</li> <li>• Spacing of streamers</li> <li>• Streamer length</li> <li>• Streamer material</li> </ul> <p>Observer reports provide information about mitigation gear usage, gear descriptions, and fisher attitudes toward seabird mitigation.</p>
South Africa	All Large Pelagic Longline vessels are subjected to port inspection in line with Port State Measures and as per attached Annexure 5 of the Large Pelagic Longline permit conditions. This port inspection is carried out by the Fishery Compliance Officers in conjunction with the Observers. This includes the Tori line measurements, checking the availability of the de-hooking devices as well as line cutters. In addition, Patrol vessels are from time to time tasked to randomly board the large pelagic longline vessels for the inspection of the above.	Through section B and C of the attached Annexure 5 <sup>Error! Bookmark not defined.</sup> of the Large Pelagic Longline permit conditions, an Observer is required to confirm the deployment of Tori line every day as well as weighted lines.

	<b>Methods being used to monitor compliance with bycatch mitigation measures, including coverage level</b>	<b>Type of information collected</b>
Taiwan	<p>We dispatch observer to monitor compliance with bycatch mitigation measures. The observer coverage rate is about 19% (efforts) by vessel in 2019/2020 fishing season. Besides, all SBT authorized vessels operating at south of 25°S shall report the usage of bycatch mitigation measures by fishers by logbook and e-logbook since 2017/18 fishing season. For alternative way, fishers shall report their seabirds-mitigation measure every week through Taiwan Tuna Association (TTA). Any conditions for not compliance identified during review by the FA officials shall trigger further investigations and enforcement of sanctions.</p>	<p>Fishers shall report the measures adopted by its vessels to the FA every day by E-logbook. Besides, observers shall record the mitigation measures adopted by the vessel on the observer's logbook since 2014.</p>

**Extract of relevant ERS paragraphs from the  
Report of the Sixteenth Meeting of the Compliance Committee (October 2021)**

***ERS Related Measures***

The Secretariat submitted paper [CCSBT-CC/2110/05](#) which examined the extent to which Members have implemented CCSBT's measures in relation to Ecologically Related Species (ERS) together with Members' performance with respect to ERS. The main issues to note for 2020, which is the most recent calendar year for which data is available, were:

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- Most Members (Australia for its longline fleet, Indonesia, Japan, Korea and New Zealand) did not achieve the overall scientific observer effort coverage target of 10% in at least one of their fleets and Korea did not have any observer coverage of its SBT fleet. Another Member (South Africa) did not submit the ERS data necessary to determine its scientific observer coverage (the same occurred for 2019). Furthermore, five Members (Australia for its longline fleet, Indonesia, Japan, Korea and New Zealand) only achieved a 50% representativeness (or less) for their observer coverage.
  - Japan and Taiwan reported some observed sets that used only a single seabird mitigation measure in areas where two or more mitigation measures are required by the CCSBT. For Japan about 50% of its observed effort used only a single mitigation measure where two measures were required. However, this is an improvement from 71.5% of effort using a single measure in 2019. For Taiwan, 6.1% of sets in Statistical Areas 2 or 14 used a single measure, which was similar to the amount of 6.3% in 2019. However, Taiwan's use of a single measure in areas 3-10 declined from 8.6% in 2019 to 0% in 2020. It was not possible to determine the use of mitigation measures by Indonesia, Korea, or South Africa due to the lack of suitable data.
  - There was a substantial decline in the raised number of seabird kills from 2019 to 2020 for Japan, New Zealand and Taiwan. However, the raised number of seabird kills was over 1,500 in total, which excludes Indonesia, Korea and South Africa for which no estimates are available. Australia had zero seabird kills.
  - With the exception of South Africa which did not submit ERS data in 2019 or 2020, most Members complied with most of the ERS Data Exchange requirements and with their annual reporting requirements to the Ecologically Related Species Working Group (ERSWG) and Annual CC and Extended Commission (EC) meetings. There were some exceptions that are noted in the paper.
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Key responses to issues raised in the Secretariat's paper and related questions from Members during the pre-meeting discussion were:

- In response to questions relating to observed reductions in seabird mortalities, some Members variously advised that this could be related to factors such as improved implementation of mitigation measures, improved enforcement of mitigation, reduced number of birds present during fishing events, sampling bias due to limited observer data availability due to the COVID-19 pandemic, and differing areas of observer deployment. There was no single variable that the reduction in seabird mortalities was strongly attributed to.
- Some Members noted that the COVID-19 pandemic has impacted adversely on their ability to deploy scientific observers.
- Australia confirmed that its farming operations are observed by human observers and that its longline catch is observed using electronic monitoring.

- Japan advised that it will continue its corrective actions with respect to use of mitigation measures until it sees full implementation of the measures. Japan further advised that the information on implementation is provided to the CC for sole purpose of information as stipulated in paragraph 8 of the CCSBT's ERS Alignment Resolution. Japan considers that, the compliance assessment of ERS measures for Japan is conducted in compliance committees of other relevant RFMOs and the Compliance Committee of the CCSBT is not a place to make any such assessment for Japan.
- HSI made several comments, including in relation to: the need to improve observer coverage, potentially with the aid of EM for improved monitoring of mitigation; the need to take corrective action against compliance failings; the need to improve compliance with mitigation measures; Reducing seabird mortality; the benefit of using best practise mitigation (3 measures); the potential to use additional information sources such as logbook information on mitigation; and the need to determine the efficacy of the different mitigation measures.
- In response to a question on the interpretation of night setting reported by Members, the Secretariat advised that it will contact Members to confirm whether reports of night setting mean the entire set was conducted at night.
- The Secretariat noted that the CCSBT has a High-level Code of Practice for Scientific Data Verification, which could be updated to include cross-verification of different sources of mitigation data such as observer and logbook data.
- It was noted that as part of the response to improve the use and monitoring of seabird mitigation measures, the CCSBT is planning to commence a joint project with BirdLife International during 2022 for enhancing education on and implementation of ERS Seabird Measures within CCSBT Fisheries. This project will cover outreach, training and further development of systems to verify onboard implementation of the ERS measures.

11. Indonesia advised the meeting that it did deploy observers during 2020 and 2021, but the observers were deployed to Statistical Area 1, which is not an area where seabirds are, so it did not provide information on seabirds.

12. Korea advised that due to the COVID-19 pandemic, it has not been able to deploy observers during 2020 or 2021.

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### ***Scientific observers and electronic monitoring (EM)***

Australia commented that EM is a useful tool for monitoring the use of mitigation measures.

31. Australia also advised that the COVID-19 pandemic and ensuing lockdowns caused difficulties accessing its EM data and reduced the coverage level of Australia's EM analysis. However,

32. processes have been implemented for the current season that will ensure that observer coverage rates are met.

33. Conversely, South Africa had improved observer coverage in its 2020/21 season which was also attributed to the pandemic. When its vessels eventually went to sea, around June, almost all vessels had an observer onboard, in line with the Permit Conditions.

It was noted that unilateral replacement of scientific observers with EM is not consistent with current agreed measures in CCSBT.

The EU advised that the obligations of observer coverage in CCSBT applies to "the fishing activity of CCSBT Members and cooperating non-Members wherever Southern Bluefin Tuna is targeted or is a significant bycatch" and that this is not the case of EU vessels entering in the SBT distribution area. However, the EU noted that its fleets fulfil and surpass their obligations

regarding observer programs in accordance with the requirements of other tuna RFMOs (5% coverage).

### ***Bycatch and mitigation measures***

Other than through observers, Japan assesses implementation of mitigation measures based on documents and photographs submitted to FAJ as well as other means such as RTMP, VMS and contacts to individual fishers. The RTMP itself is based on self-reporting from the vessels, but the accuracy is verified by 100% physical inspection in designated ports in Japan and other control measures.

34. Based on evidence submitted by the industry, Japan assumes that actual compliance with mitigation measures was higher than indicated by the observer data currently submitted. This is due to issues with insufficient prior communication with observers on improved line weightings.

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## ***2.4. Assessment of compliance with CCSBT management measures***

### ***2.4.1. Compliance of Members***

41. The Chair noted that, in his view, there were a number of issues from meeting papers and discussion that he felt should be raised and for which improvement should be sought. The meeting asked the Chair to highlight the issues that he had identified. In no particular order, these were:

For South Africa:

- It has not provided data for the ERSWG Data Exchange for the last two years and no data for the Scientific Data Exchange this year. It also did not submit a National Report to the ESC this year.

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For Korea:

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For Japan:

- About 50% of Japan's observed effort in 2020 used only a single seabird mitigation measure in areas where two mitigation measures were required. This is an improvement from the previous year where nearly 72% of effort used only a single mitigation measure. The improvement is recognised and appreciated.
- In the pre-meeting discussion, Japan commented that CCSBT's ERS Alignment Resolution specifies that the Secretariat's report on implementation of ERS measures is for the sole purpose of providing information for Members and Cooperating Non-Members. Japan also noted that in its case, the compliance assessment of ERS measures is conducted in compliance committees of other relevant RFMOs and the Compliance Committee of the CCSBT is not a place to make any such assessment for Japan.

42. In relation to scientific observer coverage, the Chair noted that:

- Korea had no scientific observer coverage of its SBT fleet in 2020 and Indonesia had close to zero coverage;



- Most Members had lower scientific observer coverage in 2020 than in 2019;
- With the exception of Taiwan and South Africa, Members did not meet the 10% target scientific observer coverage for all of their SBT fleets during 2020; and
- The COVID-19 pandemic is no doubt a contributing factor to the reduced observer coverage, but it is important to improve observer coverage rates and make a concerted effort to achieve at least 10% coverage in 2022.

43. During discussions on these issues:

- Korea noted that . . .
- Japan advised that it will share information of its ERS assessments from other RFMOs. These are currently in progress so it will provide these to next year's CC meeting, in its national report.
- The meeting noted the improvements in the Japanese fleet's compliance with respect to the use of seabird mitigation measures and that it has a corrective action plan in place. Members further noted that it will require a prolonged and sustained effort from Japan to achieve a cultural change in the fishery.
- Indonesia explained that it has had some difficulties reaching the observer coverage target, including problems with personnel, problems obtaining the necessary budget, and the effects of the COVID pandemic. These issues continue in 2021.
- Australia noted that its observer coverage rates are close to 10% and is confident that its logbook data are accurate since all logbook data can be reviewed with electronic monitoring data. It further noted that electronic monitoring is very effective in the recent circumstances relating to COVID-19.
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***EU's QAR report***

82. The EU further noted that:

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- It is not obliged to comply with CCSBT's Scientific Observer Program Standards (SOPS) because it does not target nor have a significant bycatch of SBT. However, it instead complies with the scientific observer requirements (5% coverage) of other tuna RFMOs (tRFMOs). It has the intention of achieving 10% scientific observer coverage in all oceans, although in some areas that objective has not yet been reached. In 2020 the EU was not able to comply with the scientific observer requirements of other tRFMOs due to the COVID-19 pandemic.
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Another Member requested that the EU put in place more scientific observer coverage in SBT distribution areas in order to better verify the EU's declaration that there is no SBT bycatch. The EU responded that it does not have an obligation to have scientific observers on board its vessels fishing in the SBT distribution area (although it does have some), but rather it must implement its scientific observer program in accordance with other tRFMOs' scientific observer requirements. The EU also highlighted that, as explained in the QAR report, other

methods are used to cross check and verify potential SBT by-catches and invited Members to inspect any of its vessels entering CCSBT Member ports.

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### ***The future need for QARs***

The meeting discussed the QAR process to date and noted the following points:

- There was some continued support for QARs and it was recognised that targeted QARs might be more useful in future; and
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### ***Discussion of electronic monitoring systems (EMS)***

117. The Chair advised that this agenda item is to provide an opportunity for Members to discuss how EMS could be considered for utilisation within the SBT fisheries context in future. The Chair asked Australia and New Zealand if they could provide some information to the meeting about the use of EMS in their domestic fisheries.

118. Australia summarised that it has presented information on its EMS in the past which had been well received, that EMS is not a replacement for human observers but that it is one of a suite of useful monitoring tools, and that it is important that any future EMS standards that the CCSBT might consider are consistent with those developed in other RFMOs.

119. New Zealand summarised that it is useful to have EMS available as a monitoring tool in situations where it might not be possible to easily deploy human observers such as during the COVID-19 pandemic and on smaller vessels. New Zealand also mentioned that the current Scientific Observer Program Standards (SOPS) had not been drafted to take into account EMS, and that any discussions pertaining to EMS and the SOPS would need to be undertaken in ESC.

120. Japan noted that it is testing EMS on some of its vessels and had concerns about its ability to function well in latitudes where SBT are found. Australia advised that it had successfully used EMS within the CCAMLR area.

121. All Members were encouraged to keep abreast of the development of WCPFC's EMS standards. Japan noted that it would like to monitor emerging discussion on EMS in other RFMOs too, to avoid inconsistencies.

122. The meeting recommended that:

- a meeting of the Technical Compliance Working Group (TCWG) be convened in 2022 and that the main item of discussion will be EMS. The focus of the discussion will be an exchange of EMS technical information;
- Australia will provide a paper to the TCWG outlining the pros, cons and potential pitfalls it has experienced in relation to EMS;
- Australia will also provide a summary of progress on EMS standards discussions in WCPFC and IOTC if possible; and
- The USA will make available a paper that it has submitted to ICCAT which includes some technical information and costs associated with the use of EMS in an Atlantic pelagic longline fleet.

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**Agenda Item 10. Proposal to enhance the implementation of seabird measures**

138. Discussion for this sub-agenda item commenced by correspondence in advance of the CC meeting.

139. BirdLife International (BirdLife) submitted paper CCSBT-CC/2110/22 (Rev.2) which provided update on the Project for Enhancing the Implementation of Ecologically Related Species Seabird Measures within CCSBT Fisheries. Since CC15, progress has been made in developing the project for enhancing the implementation of Ecologically Related Species seabird measures within CCSBT fisheries. The Intersessional Seabird Working Group (SBWG) has been established and a draft project work plan has been developed by BirdLife International and the CCSBT Secretariat, and comments from the SBWG have been incorporated.

140. In response to a question, BirdLife advised that the intention of the risk assessment is to determine if there has been a measurable reduction of estimated seabird captures since the first Global Seabird Bycatch Assessment which used 2016 data. This is a metric of change of the project and the risk assessment will be completed toward the end of the project timeline. The results of the assessment will be available to CCSBT and other RFMOs and could be used to determine if any changes need to be made to seabird CMMs or the need for further improvements to compliance with the seabird measures. However, it is beyond the scope of this project to specify what the use may be. The scope of this project is to ensure that the risk assessment is completed.

141. BirdLife thanked Members for their effort during the year on developing the workplan for the project.

## High-level Code of practice for Scientific Data Verification

*(Agreed-Updated at the 1417<sup>th</sup> meeting of the ~~Scientific Committee~~Ecologically Related Species Working Group and adopted at CCSBT 2919)*

### Introduction

The code of practice is intended to function as both a target and a guide to Members and Cooperating Non-Members (CNMs) on the procedures that should be in place for the verification of data. It is not intended to specify the types of data collection and monitoring systems that should be in place; instead, it provides information on the type of data management systems, and the types of verification/cross checking that are expected.

### REPORTING ON SCIENTIFIC DATA VERIFICATION

To provide greatest understanding of the data, together with transparency and confidence in the data, all Members and CNMs are encouraged to report annually to the Extended Scientific Committee and to the Ecologically Related Species Working Group as appropriate on the data verification conducted in accordance with this code of practice, together with the results of comparisons and the outcomes of any investigations into the data.

### DATA MANAGEMENT SYSTEMS

It is expected that all scientific datasets maintained for CCSBT purposes would be managed using a robust database management system (e.g. SQL Server, Oracle), and preferably using a relational model. The database(s) should be professionally designed and implemented, and be accompanied by up-to-date documentation. Where a Member's datasets reside on different physical databases, systems should be in place to allow easy cross-checking and verification between the physically separated datasets.

Automatic checking should be conducted at the time of data entry/loading to prevent erroneous data being stored on the database(s). Automatic checks should include:

- **Validity checks:** These are checks or constraints on individual fields to ensure that the data is valid. They include checks on the format of the data (e.g. that a valid date is provided); the validity of codes (e.g. that a valid species code or statistical area is provided); the magnitude of a value (e.g. that a weight is within an acceptable range, and a date is not in the future etc.). A variety of validity checks should exist on nearly all fields within the database.
- **Plausibility checks:** These are checks to identify items that are unlikely, but not impossible. These checks will often be range checks such as: very small or large weights/numbers/hooks; small or large average weights for a species etc. As a minimum, when these checks reveal an unlikely item, the operator should check the data to ensure that a data entry error has not been made. Checks of this nature should be implemented for all relevant fields (most numeric and date fields) and the checks should be finetuned for the specific data (e.g. the actual species and gear) involved.

Checks of these types, when implemented at the database level as specified, significantly reduce the risk of erroneous data being stored.

## CROSS-VERIFICATION OF DATASETS

The main data that Members and CNMs currently provide to the CCSBT for SBT scientific purposes comprise: Total SBT catches, Catch and Effort, and Catch at Size/Age data. For ERS purposes the data to be provided by Members is described in the ERSWG Data Exchange document and includes: total and observed effort per strata, proportion of observed effort with specific mitigation measures, observed captures by species and fate of captures. The CCSBT has also adopted a Catch Documentation Scheme to confirm catches of Members and CNMs, as well as Scientific Observer Program Standards with a target observer coverage of 10% for catch and effort monitoring for each fishery. Furthermore, different Members/CNMs have additional programs (such as real-time monitoring, landing inspections, and quota monitoring systems) in place to monitor and manage their catches.

An important component of this code of practice is that each scientific dataset be cross-verified against other, independent data sets wherever possible and that this cross-verification be conducted for each scientific dataset on an annual basis. The cross-checking recommended for each scientific dataset is as follows:

### *Total Annual SBT Catches*

Members/CNMs report total annual SBT catches to the CCSBT as part of the “Total Catch by Fleet” data provided for the annual Scientific Data Exchange, in national reports to the Extended Scientific Committee and Extended Commission, and as part of the Final Catch by Vessel/Client reporting requirements. All these reports should be cross checked to ensure that the figures are the same. In addition, the following verification(s) should be conducted:

- The nationally reported annual SBT catches should be compared on a gear by gear basis with the annual catch estimated from CCSBT CDS documents for the same years<sup>1</sup>. It is expected that the nationally reported catch should closely match the CDS figures. Discrepancies of greater than +/- 5% should be explained. If a clear explanation is not readily available, discrepancies of greater than +/- 5% should be investigated<sup>2</sup>.
- The nationally reported annual SBT catches should be verified against any other independent nationally available total catch data sets such as quota monitoring system or landing inspections.

### *Commercial Catch and Effort data*

Catch and Effort data is provided to the CCSBT Secretariat annually as a part of the Scientific Data Exchange. These figures should be verified where possible in the following ways:

- Commercial Catch and Effort data for observed trips should be crossed-checked against the observer’s data for the same parts of the same trips. Any discrepancies should be investigated.

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<sup>1</sup> The Secretariat can provide Members with CDS figures for their documents on request. However, there is a time lag in provision of CDS data such that figures for the most recent year may not always be complete.

<sup>2</sup> A technical working group at CCSBT 12 recommended that the principles for a CCSBT CDS should include a performance measure that the CDS be capable of accounting for at least 95% of all sources of fishing mortality of southern bluefin tuna (paragraph 90 of the CCSBT 12 report)

- Commercial Catch and Effort data for non-observed shots should be compared with data for observed shots. Any substantial inconsistencies in the temporal or spatial CPUE estimates or trends, or relative proportions of bycatch for the two datasets should be investigated.
- The weights of SBT from the unraised<sup>3</sup> Catch and Effort data should be compared with:
  - Total Annual SBT Catches: Any substantial discrepancies<sup>4</sup> (including differing trends in total catches between the two data sources between years) should be investigated.
  - CDS harvest data, stratified by statistical area and month<sup>1</sup>: Again, any substantial discrepancies should be investigated.

### *Catch at Size data*

Catch at Size data are provided to the CCSBT Secretariat annually as a part of the Scientific Data Exchange. For those Members/CNMs whose Catch at Size data is collected independently of CDS Catch Tagging Forms, a spatio-temporally stratified comparison should be made of the catch at size distributions of the two data sets<sup>5</sup>. Any substantial inconsistencies should be investigated.

### *ERSWG Data Exchange*

ERS data are provided to the CCSBT Secretariat annually as part of the ERSWG Data Exchange. The majority of the information provided are collected by scientific observers. Comparisons of bycatch numbers by species group<sup>6</sup> and of the seabird mitigation conducted should be made between observer data and logbook data where this information is available. Any discrepancies should be investigated and reported. Comparisons should also be made of bycatches and mitigation reported in log book data for when observers were on board versus when observers were not on board. Again, any discrepancies should be investigated and reported.

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<sup>3</sup> Some Members raise their catch and effort data to match that of the total catch before providing that data to the CCSBT.

<sup>4</sup> After adjusting for the Catch Effort reporting rate (e.g. log books not being provided for a certain percentage of fishing).

<sup>5</sup> This is not possible for farmed product as the CDS length data is for grown out SBT.

<sup>6</sup> Using the species groups specified in the ERSWG Data Exchange.