Commission for the Conservation of
Southern Bluefin Tuna

みなみまぐろ保存委員会

CCSBT-ESC/2409/07

Impacts of Electronic Monitoring on Scientific Observer Data
(ESC Agenda item 12)

1. Background

In 2023, the Chair of the Compliance Committee, Mr Frank Meere, hosted a virtual meeting to discuss Electronic Monitoring/ Systems (EM/S) in the context of CCSBT. The aim of the meeting was to help Members reach a common understanding on a number of high-level principles that will ultimately dictate the manner in which EM/S is used within CCSBT.

The virtual meeting participants recognised that additional work was necessary to assess the potential impact of EM/S use on individual data requirements but that these discussions required a level of technical expertise that was better suited to the Extended Scientific Committee (ESC) and Ecologically Related Species Working Group (ERSWG).

The group recommended that the ESC and ERSWG review the data elements currently required to be collected by the CCSBT Scientific Observer Program Standards (SOPS) with respect to EM/S at their earliest convenience. These reviews should also include an assessment of the data being collected and whether its ongoing collection is necessary.

This issue was further discussed last year during ESC28, where the request from the EM working group was endorsed:

> *In response to a request from the Electronic Monitoring Working Group, the ESC agreed to undertake intersessional work to assess the potential impact of electronic monitoring on the information currently gathered as part of the Scientific Observer Programme Standards (SOPS). This work will be coordinated by the Secretariat and supported by technical experts nominated by Members*[1].

Accordingly, the Secretariat asked Members to take part in a review of existing data requirements found as part of the SOPS and how these may be impacted by the use of EM.

In order to facilitate this exercise, the Secretariat developed a table that includes existing data fields and allowed Members to provide their feedback in a format that would allow easy analysis of responses. Feedback was received from Korea, Australia, Japan, New Zealand, and Taiwan. The Secretariat has collated the information received from Members (**Attachment A**) and highlighted (in green) the data fields recently reviewed by the ERSWG in order to avoid duplicating work across the two subsidiary groups.

One of the outcomes of the recent ERSWG, was for this group to recommend the addition of hook-shielding devices as one of the mitigation types captured as part of the EDE.

[1] Paragraph 163 of the ESC 28 report.

2. Secretariat Summary of Responses

After reviewing the responses received from the five Member submissions, it is apparent that there are differing views amongst those Members as to the limitations of EM/S as an alternative to physical observers. Members may wish to discuss how best to resolve this divergence including by considering whether additional information from those Members utilising is necessary to increase confidence across the Membership.

It should be noted that both Japan, New Zealand and Korea elected to abstain from submitting on those sections which relate to the purse seine fishery based on the fact that neither engages in this fishery.

Perhaps the area of greatest congruence was in relation to the question of whether the current information should continue to be collected where respondents generally favoured retaining the existing data.

3. Recommended actions for the ESC

Based on the request from the Electronic Monitoring Working Group, the ESC is asked to:

(1) Review the feedback from Member submissions;

(2) Consider the recommendation from ERSWG to add hook-shielding devices as one of the Seabird mitigation types to be collected under the SOPS[2];

(3) Consider what other changes may be required of the SOPS and, if any, propose these to the EC; and

(4) Consider whether additional information should be sought from those Members currently utilising EM.

Prepared by the Secretariat

[2] Specifically, it is suggested to add a sub-bullet point of "Hook shielding devices" under a bullet point "Seabird mitigation measures used" in Longlining section, item C) of Attachment A of SOPS.

Attachment A

All fishing:

Data/ information field name	Can information be collected by EM/S					Time of collection of information[3]	Still necessary to collect this field? (Y/N)				
	JP	NZ	TW	AU	KR		JP	NZ	TW	AU	KR
• Vessel's Name	N	Y	Y	Y	Y	EM set-up/Pre-trip	Y	Y	Y	Y	Y
• Vessel's Call-sign	N	Y	N	Y	N	EM set-up/Pre-trip	Y	Y	N	Y	Y
• Vessel's Flag	N	Y	N	Y	N	EM set-up/Pre-trip	Y	Y	N	Y	Y
• Name of the Captain	N	Y	N	Y	N	EM set-up/Pre-trip	Y	N	N	Y	Y
• Name of the fishing master	N	Y	N	Y	N	EM set-up/Pre-trip	Y	N	N	Y	Y
• Year vessel built	N	Y	N	Y	N	EM set-up/Pre-trip	Y	Y	N	Y	Y
• Engine brake power (kw/hp)	N	Y	N	Y	N	EM set-up/Pre-trip	Y	N	N	Y	Y
• Overall length (metres)	N	Y	N	Y	N	EM set-up/Pre-trip	Y	Y	N	Y	Y
• Gross tonnage (tonnes)	N	Y	N	Y	N	EM set-up/Pre-trip	Y	Y	N	Y	Y
• Number of people in crew (all staff, excluding observers)	N	Y	N	Y	N	EM set-up/Pre-trip	Y	N	N	Y	Y
• Total freezer capacity (cubic metres)	N	Y	N	Y	N	EM set-up/Pre-trip	Y	Y	N	Y	Y
• Fuel capacity (tonnes)	N	Y	N	Y	N	EM set-up/Pre-trip	Y	N	N	Y	Y

Instrumentation and electronic fishing equipment:

Instrumentation	Is present - - Yes/No (or code)	Can information be collected by EM/S					Time of collection of information	Still necessary to collect this field? (Y/N)				
		JP	NZ	TW	AU	KR		JP	NZ	TW	AU	KR
GPS		N	Y	N	N	N	Set-up,pre-trip, post-trip	Y	Y	Y	Y	Y
Radio direction finder		N	N	N	N	N	Set-up,pre-trip, post-trip	Y	Y	Y	Y	Y
Radar		N	N	N	N	N	Set-up,pre-trip, post-trip	Y	Y	Y	Y	Y
Weather Fax		N	N	N	N	N	Set-up,pre-	Y	Y	Y	Y	Y

[3] Use one of the abbreviations is Table 1 e.g. either EM Set-up, EM Real-time, Pre-Trip, Post-Trip or NA

							trip, post-trip					
Track plotter		N	N	N	N	N	Set-up,pre-trip, post-trip	Y	Y	Y	Y	Y
NOAA receiver		N	NA	N	N	N	Pre-trip, post-trip	Y	NA	Y	Y	Y
Sounder (1=colour monitor, 2=monochrome monitor, 3=printer)		N	N	N	N	N	Set-up,pre-trip, post-trip	Y	Y	Y	Y	Y
Sonar (1=scanning, 2=PPI)		N	N	N	N	N	Set-up,pre-trip, post-trip	Y	Y	Y	Y	Y
Doppler current monitor		N	N	N	N	N	Set-up,pre-trip, post-trip	Y	Y	Y	Y	Y
Sea surface temperature recorder		N	N	N	N	N	Set-up,pre-trip, post-trip	Y	Y	Y	Y	Y
Bathy-thermograph		N	N	N	N	N	Set-up,pre-trip, post-trip	Y	Y	Y	Y	Y
Bird radar		N	N	N	N	N	Set-up,pre-trip, post-trip	Y	Y	Y	Y	Y

Longliners only:

Data/ information field name	Can information be collected by EM/S					Time of collection of information	Still necessary to collect this field? (Y/N)				
	JP	NZ	TW	AU	KR		JP	NZ	TW	AU	KR
Material of mainlines (Nylon, Cotton thread, Other)	N	N	N	N	N	Pre-trip, post-trip	Y	N	Y	Y	Y
Material of branchlines (Nylon, Cotton thread, Type of trace, Other)	N	N	N	N	N	Pre-trip, post-trip	Y	N	Y	Y	Y
Material of buoylines (Nylon, Cotton thread, Other)	N	N	N	N	N	Pre-trip, post-trip	Y	N	Y	Y	Y

Purse seiners only:

Data/ information field name	Can information be collected by EM/S					Time of collection of information	Still necessary to collect this field? (Y/N)				
	JP	NZ	TW	AU	KR		JP	NZ	TW	AU	KR
• Capacity of power block			N	N		Pre-trip, post-trip			Y	Y	
• Capacity of purse winch			N	N		Pre-trip, post-trip			Y	Y	
• Lengths and depths of all nets on board including expanded figure			N	N		Pre-trip, post-trip			Y	Y	
• Mesh sizes of nets on board			N	N		Pre-trip, post-trip			Y	Y	

• Number of net skiffs on board			N	N		Pre-trip, post-trip			Y	N	

B) Summary of the observed trip

Data/ information field name	Can information be collected by EM/S					Time of collection of information	Still necessary to collect this field? (Y/N)				
	JP	NZ	TW	AU	KR		JP	NZ	TW	AU	KR
Observer's name		N	N	Y	N	Pre, Post, Real Time		Y	Y	Y	Y
Observer's organisation		NA	N	Y	N	Pre, Post, Real Time		NA	Y	Y	Y
Date observer embarked (translatable to 24 hour clock, UTC to the day)	Y	N	N	N	N	Pre, Post, Real Time	Y	Y	Y	N	Y
Date observer disembarked (translatable to 24 hour clock, UTC to the day)	Y	N	N	N	N	Pre, Post, Real Time	Y	Y	Y	N	Y

C) Comprehensive catch, effort and environmental information for each set
<u>All fishing:</u>

Data/ information field name	Can information be collected by EM/S					Time of collection of information	Still necessary to collect this field? (Y/N)				
	JP	NZ	TW	AU	KR		JP	NZ	TW	AU	KR
• Date and time at start of Set (translatable to 24 hour clock, UTC)	Y	Y	Y	Y	Y	Real-Time	Y	Y	Y	Y	Y
• Date and time at end of Set (translatable to 24 hour clock, UTC)	Y	Y	Y	Y	Y	Real-Time	Y	Y	Y	Y	Y
• Date and time at start of Retrieval (translatable to 24 hour clock, UTC)	Y	Y	Y	Y	Y	Real-Time	Y	Y	Y	Y	Y
• Date and time at end of Retrieval (translatable to 24 hour clock, UTC)	Y	Y	Y	Y	Y	Real-Time	Y	Y	Y	Y	Y
• Location at start of Set (latitude+N/S and longitude+E/W to a minute of accuracy)	Y	Y	Y	Y	Y	Real-Time	Y	Y	Y	Y	Y
• Wind speed (with unit) and direction (N, NNE, NE, etc.) of the operation	N	N	N	N	N	Real-Time, NA	Y	Y	N	Y	Y
• Time of wind measurement for operation (e.g. Noon, start of set etc.)	N	N	N	N	N	Real-Time, NA	Y	Y	N	Y	Y

• Sea surface temperature (degrees Celsius, to 1 decimal place) at start of Set	N	N	N	N	N	Real-Time, NA	Y	Y	Y	Y	Y
• Intended target species	N	Y	N	Y	N	Real-Time, Pre, Post	Y	Y	Y	Y	Y

Longlining:

Data/ information field name	Can information be collected by EM/S					Time of collection of information	Still necessary to collect this field? (Y/N)				
	JP	NZ	TW	AU	KR		JP	NZ	TW	AU	KR
• Location at end of Set (latitude+N/S and longitude+E/W to a minute of accuracy)	Y	Y	Y	Y	Y	Real-Time	Y	Y	Y	Y	Y
• Direction of line set (eg straight, curved)	N	Y	N	N	N	Real-Time, Post	Y	Y	N	N	Y
• Actually used mainline length (km)	N	Y	N	Y	N	Real-Time, Post, NA	Y	Y	Y	Y	Y
• Actually used branchline length (m)	N	Y	N	Y	N	Real-Time, Post, NA	Y	Y	Y	Y	Y
• Actually used buoyline length (m)	N	Y	N	Y	N	Real-Time, Post, NA	Y	Y	Y	Y	Y
• Intended depth of the shallowest hook (m)	N	N	N	Y	N	Real-Time, Post, NA	Y	Y	Y	Y	Y
• Intended depth of the deepest hook (m)	N	N	N	Y	N	Real-Time, Post, NA	Y	Y	N	Y	Y
• Type of hooks	N	Y	N	Y	N	Real-Time, Post, NA	Y	Y	Y	Y	Y
• Number of hooks	Y	Y	Y	Y	Y	Real-Time	Y	Y	Y	Y	Y
• Number of baskets	Y	Y	Y	Y	Y	Real-Time	Y	Y	Y	Y	Y

Data/ information field name	Can information be collected by EM/S					Time of collection of information	Still necessary to collect this field? (Y/N)				
	JP	NZ	TW	AU	KR		JP	NZ	TW	AU	KR
• Seabird mitigation measure used:		Y	Y			Real-Time		Y	Y		
○ Line weights used (Y/N)	N	Y	Y	Y	Y	Real-Time, Post	Y	Y	Y	Y	Y
○ Mass of added line weight (where applicable)	N	Y	N	N	N	Real-Time, Post, NA	Y	Y	Y	Y	Y
○ Distance between weight and hook (where applicable)	N	Y	N	N	N	Real-Time, pre, Post	Y	Y	Y	Y	Y
○ Number of tori lines used (where applicable)	N	Y	Y	Y	N	Real-Time, Post	Y	Y	Y	Y	Y
○ Estimate of the aerial coverage achieved by tori lines (m)	N	N	Y	N	N	Real-Time, Post	Y	Y	Y	Y	Y
○ Night setting with minimal deck lighting (Y/N)	Y	Y	N	Y	Y	Real-Time, NA	Y	Y	Y	Y	Y
○ Bait thrower/line shooter used (Y/N)	Y	Y	Y	Y	Y	Real-Time	Y	Y	Y	Y	Y
○ Dyed Bait (Y/N)	Y	Y	Y	N	NA	Real-Time, NA	Y	Y	Y	N	Y
○ Details about management of offal	N	Y	N	Y	N	Real-Time, NA	Y	Y	Y	Y	Y
○ Underwater setting chute (Y/N)	N	Y	Y	Y	N	Real-Time	Y	Y	Y	Y	Y
○ Side setting (Y/N)	N	Y	Y	Y	N	Real-Time	Y	Y	Y	Y	Y
○ Haul mitigation (Y/N)		Y	Y			Real-Time		Y	Y		
▪ Branch line/snood haulers	Y	Y	Y	Y	Y	Real-Time, NA	Y	Y	Y	Y	Y
▪ Brickle curtain	Y	Y	Y	Y	Y	Real-Time	Y	Y	Y	Y	Y
▪ Water cannon	Y	Y	Y	Y	Y	Real-Time	Y	Y	Y	Y	Y
○ Other mitigation measures used	N	Y	Y	N	N	Real-Time, NA	Y	Y	Y	Y	Y
• Distance between baskets, beacons, buoys, or floats as is appropriate to the operation (m)	N	Y	N	N	N	Real-Time, Post, NA	Y	Y	Y	Y	Y
• Percentage of bait by bait categories that were Fish, Squid, Artificial, and Other	Y	Y	N	N	Y	Real-Time, NA	Y	Y	Y	Y	Y
• Bait status (live or dead)	N	N	Y	N	N	Real-Time, NA	Y	Y	Y	Y	Y
• Total number by species of SBT, and other tuna and tuna-like species caught, retained or discarded.	N	Y	Y	Y	Y	Real-Time	Y	Y	Y	Y	Y
• Total processed weight (kg) and Processed State by species of SBT, and all other species caught.	N	Y	N	N	N	Real-Time, Post	Y	Y	Y	Y	Y

Purse Seining:

Data/ information field name	Can information be collected by EM/S		Time of collection of information	Still necessary to collect this field? (Y/N)	
	AU	TW		AU	TW
• Spotter plane used (Y/N). If used:	N	Y	Real-Time, Pre, Post	Y	Y
○ Time (translatable to 24 hour clock, UTC) and location aircraft began search	N	Y	Real-Time, NA	Y	Y
○ Time (translatable to 24 hour clock, UTC) and location aircraft ended search	N	Y	Real-Time, NA	Y	Y
○ Number, location of schools spotted by aircraft	N	N	Post, NA	Y	Y
○ Estimated size of each school spotted by the aircraft	N	N	Post, NA	Y	Y
○ Total searched distance	N	N	Post, NA	Y	Y
• Bird Radar used (Y/N)	N	N	Post, NA	Y	Y
• Logbook number and type	N	N	Post, NA	Y	Y
• Start and end Time spent for searching (from xx:xx to yy:yy translatable to 24 hour clock, UTC), location and total searched distance	N	N	Post, NA	Y	Y
• School finder (plane/vessel)	N	N	Post, NA	Y	Y
• Chumming boat used (yes/no)	N	Y	Real-Time, NA	Y	Y
• Chum status (Alive/Dead)	N	N	Post, NA	Y	Y
• Amount of chum used	N	N	Post, NA	Y	Y
• Start and end time for chumming (translatable to 24 hour clock, UTC)	N	Y	Real-Time, NA	Y	Y
• Start and end time for net shooting (translatable to 24 hour clock, UTC)	Y	Y	Real-Time	Y	Y
• Start and end time for net hauling (translatable to 24 hour clock, UTC)	Y	Y	Real-Time	Y	Y
• Start and end location for net shooting	Y	Y	Real-Time	Y	Y
• Start and end location for net hauling	Y	Y	Real-Time	Y	Y
• Light attraction used (yes/no)	Y	Y	Real-Time, Pre, Post	Y	Y
• Total of wattage of lights used	N	N	Pre, NA	Y	Y
• Start and end time for light attraction	N	Y	Real-Time, NA	Y	Y
• School type (e.g., shoaling/surface, FAD/debris associated)	N	Y	Real-Time, NA	Y	Y
• Length (m) of net set	N	N	Real-Time, NA	Y	Y
• Height (m) of the net	N	N	Real-Time, NA	Y	Y
• Number of net skiffs used	Y	Y	Real-Time, Pre, Post	N	Y
• Date and time that transfer to tow cage commenced	Y	Y	Real-Time, Pre, Post	Y	Y
• Identification number of the tow cage to which the SBT were transferred	N	N	Post, NA	Y	Y
• Name of Carrier Boat that received the fish	N	N	Post, NA	Y	Y
• Estimated catch per set, species composition	N	N	Post, NA	Y	Y
• Estimated weight (kg) and/or number by species of SBT and other species caught	N	N	Post, NA	Y	Y
• Estimated weight of SBT caught alive	N	N	Post, NA	Y	Y
• Estimated weight and/or number of SBT dead during operation	N	N	Post, NA	Y	Y

Cage Towing:

Data/ information field name	Can information be collected by EM/S		Time of collection of information	Still necessary to collect this field? (Y/N)	
	AU	TW		AU	TW
• Name of carrier boat	Y	N	Set-up, Post	Y	N
• Tow cage identification number	N	N	Post, NA	Y	N
• Cage depth (metres)	N	N	Post, NA	N	N
• Cage ring diameter (metres)	N	N	Post, NA	N	Y
• Cage mesh size (in centimetres)	N	N	Post, NA	N	Y
• Cage has second or predator net (Y/N)	N	Y	Real-time, NA	N	Y
• Number of divers used	N	Y	Real-time, NA	N	Y
• Chute fitted in cage (Y/N)	N	Y	Real-time, NA	N	Y
• Effective tow speed (km/hour)	Y	Y	Real-time	N	Y
• If the catch was received from fishing operations, then for each catcher boat from which SBT were transferred, record:		Y	Real-time	Y	Y
○ Name of catcher boat	N	N	Post, NA	Y	Y
○ Call sign of catcher boat	N	N	Post, NA	Y	Y
○ Date and time (translatable to 24 hour clock , UTC) transfer started	Y	Y	Real-time	Y	Y
○ Estimated weight of SBT transferred (tonnes)/dead SBT before transfer	N	N	Post-trip, NA	Y	Y
• If the catch was received from another tow cage, then, record:		N	Post-trip, NA	Y	Y
○ Name of the carrier boat from which the SBT came	N	N	Post-trip, NA	Y	Y
○ Identification number of the tow cage from which the SBT came	N	N	Post-trip, NA	Y	Y
○ Date and time (translatable to 24 hour clock, UTC) transfer started.	Y	Y	Real-time, Pre, Post	Y	Y
○ Estimated weight of SBT transferred (tonnes)/dead SBT before transfer	N	N	Post, NA	Y	Y
• Date and time (translatable to 24 hour clock, UTC) and place that tow finished	Y	Y	Real-time, Pre, Post	Y	Y
• Total weight of SBT mortalities per day from commencement of towing to end of transfer to farm	N	N	Post, NA	Y	Y
• Total number of SBT mortalities per day from commencement of towing to end of transfer to farm	N	N	Post, NA	Y	Y

D) Observed catch information

This relates to the catch that was recorded during the hauling process.

Longlining:

Data/ information field name	Can information be collected by EM/S					Time of collection of information	Still necessary to collect this field? (Y/N)				
	JP	NZ	TW	AU	KR		JP	NZ	TW	AU	KR
• Date and time at the start of the observation period (translatable to 24 hour clock, UTC)	Y	Y	Y	Y	Y	Real-time,	Y	Y	Y	Y	Y
• Date and time at the end of the observation period (translatable to 24 hour clock, UTC)	Y	Y	Y	Y	Y	Real-time	Y	Y	Y	Y	Y
• Number of hooks observed	Y	Y	Y	N	Y	Real-time, NA	Y	Y	Y	Y	Y
• Total number by species of all species caught and retained during the observed period	Y	Y	Y	Y	Y	Real-time,	Y	Y	Y	Y	Y
• Total processed weight (kg) by species and Processed State of all species caught and retained during the observed period	N	Y	N	N	N	Real-time, post	Y	Y	Y	Y	Y
• Total number and weight when possible (whole weight, in kilograms) by species of all species caught but discarded during the observed period and life status.	N	Y	N	N	N	Real-time, post, NA	Y	Y	Y	Y	Y

Purse Seining:

The entire purse seining shooting and hauling operation should be observed

Data/ information field name	Can information be collected by EM/S		Time of collection of information	Still necessary to collect this field? (Y/N)	
	AU	TW		AU	TW
• Date and time at the start of the observation period (translatable to 24 hour clock, UTC)	Y	Y	Real-time, Pre, Post	Y	Y
• Date and time at the end of the observation period (translatable to 24 hour clock, UTC)	Y	Y	Real-time, Pre, Post	Y	Y
• Estimated % of school caught	N	N	NA	N	Y
• Estimated weight (tonnes for SBT, kg for all other species) and/or number by species of SBT, and all other species caught, retained or discarded including life status	N	Y	Real-time, NA	Y	Y
• Weight of SBT mortalities from commencement of fishing to end of transfer to cage	N	Y	Real-time, NA	Y	Y
• Number of SBT mortalities from commencement of fishing to end of transfer to cage	Y	Y	Real-time, Pre, Post	Y	Y
• Number of species identified as escaped from commencement of	N	Y	Real-time,	N	Y

	fishing to end of transfer to cage			NA		
•	Number by species identified as discarded from commencement of fishing to end of net hauling	N	Y	Real-time, NA	Y	Y

Cage Towing:

The observer must observe or conduct each mortality count during the period of the tow.

Data/ information field name	Can information be collected by EM/S		Time of collection of information	Still necessary to collect this field? (Y/N)	
	AU	TW		AU	TW
• Date and time at the start of the observation period (translatable to 24 hour clock, UTC)	Y	Y	Real-time, pre, post	Y	Y
• Date and time at the end of the observation period (translatable to 24 hour clock, UTC)	Y	Y	Real-time, pre, post	Y	Y
• Total weight of SBT mortalities per day from commencement of towing to end of transfer to farm	N	N	Post, NA	Y	Y
• Total number of SBT mortalities per day from commencement of towing to end of transfer to farm	N	N	Post, NA	Y	Y