7th meeting of the WCPFC E-reporting and E-monitoring Working Group

19 November 19 2025

Online

Draft Minimum Standards and Guidelines of the Regional Electronic Monitoring Program Audit Questionnaire

ERandEM IWG7_WP4
14 November 2025

Submitted by Interim ERandEM IWG Chair

Agreed Minimum Standards and Guidelines of the Regional Electronic Monitoring Program Audit Questionnaire

The agreed minimum standards are part of the Commission Audit process of national electronic monitoring program (EMP) or sub-regional EMP; questions related to the standards are asked during the audit process to determine if a program is fulfilling the required standard, or whether the program may need assistance to help achieve the required standards.

The majority of the agreed minimum standards for the WCPFC EMP were generated and discussed during the ERandEM IWG XXX . Also, included at the end of this document are suggested guidelines for the EMPs to use as guides; these were agreed to be guidelines rather than agreed minimum standards and are included for information only.

This questionnaire is an example of questions that would be asked during an interview. If a question is not relevant to your program N/A should be placed in the comments area. If there are any further questions or clarifications required, please contact the WCPFC EMP Audit & Assurance Lead XXX.

Name of Person/s attending the interview/ filling out the questionnaire -

Position -

Name of Program –-

Number of Vessels participating in EMP-

Item	Standard Required
Authorization Process Authorization process is the standards required to obtain interim and full authorization to be part of the WCPFC EMP. The process of gaining full authorization is to be carried out following an audit of the program to ensure that standards are in place or are being developed.	The Secretariat will authorize national observer programs rather than individual observers; this is consistent with the Convention text. CMM-2018-05 Para13(b) also states that the Secretariat will authorize observer providers. *IWGROP2/TCC4/WCPFC5/WCPFC15-* UPDATE TO REFLECT THE WCPFC EMP
	WCPFC EMP expectation on the authorization process.
	Before the auditing takes place, the program will have been interim authorized by the Secretariat according to the rules and standards as adopted by the Commission. This will necessitate all programs to: • Supply manuals and guides to the Secretariat • Nominate a National/Regional EMP Coordinator • Supply lists of all current vessels in the EM program • Supply an official letter requesting WCPFC EMP inclusion.

1. Has the program been previously authorized to be part of the WCPFC EMP?	Yes ☐ No ☐
Comment –	
2. Where there any deficiency in previous Audits?	Yes ☐ No ☐
Comment-	
3. Does the program supply regular updates of the names of vessels participating in their program to the ROP Secretariat?	Yes ☐ No ☐
Comment	
4. Has the program supplied program manuals and guides to the Secretariat?	Yes ☐ No ☐
Comment	
5. Has the program supplied current details of the WCPFC EMP Coordinator to the Secretariat?	Yes ☐ No ☐
Comment	

Item	Standard Required
Onboard EM Systems All vessel components supporting the acquisition of and reporting of EM Records. EM system control center The EM control center is a computer and software system that records and stores information from EM System components (e.g., video, sensor data, GPS data, system log data) and also controls the operation of onboard EM system components. Onboard user interface A display that communicates EM system process status messages and provides views of onboard cameras. Cameras Digital video cameras are placed in strategic locations (e.g., deck, sorting areas, discard areas) to record fishing activities, including catch handling, species identification, and discarding.	Onboard EM Systems MUST be configured such that they allow generation of the data fields set out in the EM data requirements. The core EM System components covered in these Specifications, Standards, and Procedures (SSPs) are: control center, user interface, cameras, geolocation device, uninterruptible power supply, sensors, and communication system. **WCPFC Expectation of Onboard EM Systems** The EM system control center a. MUST control all onboard EM hardware components. b. MUST be able to connect to the vessel's power source and sustain this power source throughout the duration of the fishing trip. c. MUST store and SHOULD transmit system health status information. d. MUST have sufficient storage capacity for all EM Records required to be generated [during a fishing trip] until EM Records are transmitted to a DRC for review. e. SHOULD have sufficient backup storage to mitigate potential data loss. f. SHOULD have unambiguous and unique identification of storage devices (e.g., barcode on hard drives). g. MUST allow EM records to be transmitted, stored or accessed securely. To secure EM records, the system SHOULD be equipped with applications such as user logins, EM record encryption and firewalls. h. MUST store all EM Records on storage devices and in formats that are compatible or can be readily translated into formats that are compatible with CCMs DRC hardware and EM review software. The onboard user interface a. MUST include a display on the vessel. b. MUST include software or hardware that shows EM system health status and real time images from installed cameras on the display. c. MUST allow only authorized users (e.g., EM Service Providers, EM service technicians) to adjust system configurations. d. COULD Include a keyboard, mouse, touchscreen, or other device to allow user inputs to the system. Cameras a. An EM system MUST be outfitted with cameras to capture imagery of fishing activity. b. The number and position of cameras MUST be sufficient to capture necessary imagery to allow generation of the data fields set out in the EM data requirements. c. Cameras MUST, capture imagery that meets image quality standards under typical fishing conditions that allow for an EM Analyst to generate the data fields set out in the EM data requirements. As a minimum standard[1]: 1. Frame rate MUST be no lower than 5 frames per second (fps) for any imagery requiring identification of species; and 2. Resolution MUST be no lower than 720p for any imagery requiring identification of species. SHOULD be capable of accommodating remote or onboard

[1] Other camera configurations (e.g. shutter speed, bitrate etc.) may vary to balance collection of adequate footage versus storage and transmission costs.

	configuration of parameters to optimize camera functionality throughout a typical fishing trip; Recorded imagery: e. MUST be recorded in a widely used and accessible video or image file format, such as MP4 or JPEG, or other compression standards that are able to be viewed. f. MUST include a timestamp, location, and vessel identification information on the video or image.
<u>Geolocation Data and Device</u> A device that is used to capture information on vessel position that can also be used to determine vessel speed and heading.	<u>Geolocation Data and Device</u> a. A geolocation device[2] MUST record vessel location coordinates and the associated date and time in a format capable of integration with EM Records b. The geolocation device MUST be installed and remain in a location in accordance with the manufacturer's guidelines such that the device can reliably function. c. The EM system COULD transmit geolocation data and associated date and time, and vessel identification information to DRCs on a regular basis, as defined by the relevant program requirements, throughout the duration of a fishing trip in a format compatible with DRC software. d. The EM system COULD be able to verify whether transmissions of geolocation data and associated date and time, and vessel identification information to DRCs are successful. e. If the EM system is unable to transmit geolocation data due to a communication error, it SHOULD store geolocation data and automatically send it as soon as practically possible after communication is restored.
<u>Uninterruptible Power Supply</u> Provides power to the system and enables controlled shutdown in the event of a power loss so as to preserve the security and integrity of data.	<u>Uninterruptible Power Supply</u> a. The EM system SHOULD include a UPS in the event that the main source of power is interrupted.
<u>Sensors</u> EM systems may be equipped with a variety of integrated sensors that can provide additional information on fishing activity, trigger activation or adjustment of configurations of cameras, and identify points of interest to expedite EM video review. This may include "synthetic sensors" that use camera imagery used to capture imagery of fishing activities.	<u>Sensors</u> a. EM systems SHOULD be outfitted with sensors, which may include the use of camera imagery as a synthetic sensor, to determine whether fishing activity is occurring, e.g., hydraulic or drum rotation sensors. If the EM system is outfitted with sensors, then it SHOULD be capable of generating and recording a log file of readings from system sensors stored in a similar manner to time and geolocation information.
<u>Communication System</u> Allows for data transmission to a shore-based control center for analysis and storage.	<u>Communication System</u> a. The EM System SHOULD have or integrate with at least one network communication system that enables the reliable and regular transmission (e.g., daily or weekly, hourly) of near-real-time data on system health (including still images for EM system status verification when prescribed by the program requirements), sensors (if applicable), and geolocation to DRCs during all fishing activity, and to the extent possible, supports remote access to the EM system by the EM Service Provider or their designated service technicians. b. The network communication system(s) SHOULD be a widely used and globally recognized technology, such as i. 3G, 4G, or 5G cellular networks.

Weather Resistance All external components must be durable and weather-resistant to withstand the harsh marine environment. Tamper Resistant and Tamper Evident The entire system and its data must be designed to be tamper-resistant (difficult to modify without authorization) and tamper-evident (any attempts at unauthorized modification are clear and easily detectable). Compatibility with other Onboard Equipment The EM system must be able to integrate with existing systems like the Vessel Monitoring System (VMS) for location data and potentially other navigation or communication equipment, often requiring standard data formats and communication protocols for interoperability. Compatibility with DRC Review Software The system must produce data in a format that can be easily ingested, processed, and analyzed by the onshore review software used by fisheries managers and data analysts. This ensures efficient data processing, reporting, and record retention, and allows for the potential use of computer vision and machine learning tools in the future. Spatial Calibration The camera views must be set up in a customized manner for each vessel to ensure maximum coverage of relevant areas. This includes using a calibrated object in the camera's view to allow analysts to accurately estimate fish length and size from the video footage.	ii. Wi-Fi iii. Satellite communications. c. The EM system COULD be able to verify whether transmissions of data on system health (including still images), sensors, and geolocation to DRCs are successful. d. The EM System SHOULD have ethernet or any other communication system allowing data transfer and remote access to the system via the onboard connection. Weather Resistance a. EM hardware components that are utilized on deck and are exposed to the elements (e.g., sensors and cameras) MUST be sufficiently dust and water resistant (e.g., IP66) and durable (e.g., corrosion, impact, and vibration resistant) to operate reliably under the range of conditions expected in their location on fishing vessels. IP67 or IP68 SHOULD be used for those locations where significant water contact is expected. Tamper Resistant and Tamper Evident a. The onboard hardware MUST be robust and tamper evident to mitigate the risk of intentional sabotage or malfunctions. This MUST include physical and/or software features. b. The EM System SHOULD feature a login history tool which allows the tracking of information on when and by whom system configuration settings have been accessed offering insights into possible tampering attempts. Compatibility with other Onboard Equipment o The EM System SHOULD be capable of functioning in close physical proximity to other onboard electrical and hydraulic equipment (i.e., EM System operations MUST not be materially impacted by the presence of other onboard electrical equipment and MUST not materially impact the proper functioning of other onboard electrical equipment). Compatibility with DRC Review Software o All EM Records generated by the EM system MUST be in a compatible format or be able to be converted into a compatible format, to allow the ingestion of the EM Records into an analysis software being used. Capable of Spatial Calibration o An EM system SHOULD have capability for spatial calibration for accurate image and fish length measurements. System Health Status a. The system SHOULD execute a system health test either automatically or when initiated by user and MUST provide a visual signal on the display that the system is operational (i.e., it should be obvious, simply by looking at the display, whether or not the system is working properly). b. The EM system MUST be able to generate a log file that allows an EM program to determine the operational health status of the system. The log file SHOULD include details of EM system processes, including, but not limited to: i. System power up ii. System shutdown planned iii. System shutdown unplanned (e.g., power cut) iv. Camera connectivity v. Camera recording start and stop times (planned)

System Health Status The system needs self-monitoring capabilities to detect and report issues such as power failures, sensor malfunctions, camera outages, or tampering attempts. This information is often transmitted to the data review center, allowing managers to confirm the system is operational and the data is reliable.	vi. Camera recording error[4] vii. Available hard drive space viii. Sensor connectivity, if applicable ix. Sensor recording start and stop times (planned) , if applicable x. Sensor recording error, if applicable xi. Activation and deactivation of recording triggers (e.g., vessel speed, drum rotation sensors, geofencing, and time scheduled), if applicable c. System SHOULD undertake regular system health checks throughout the duration of the fishing trip at a frequency defined by the EM Program and MUST show malfunction alerts (errors and warnings) on the display of the user interface (Onboard User Interface) of the control center. d. The EM system COULD be able to capture and store single frame images from each onboard camera on a regular basis (e.g., timed intervals, such as hourly, or on event triggers such as geofences) to show that cameras are operational, not obstructed, obscured, or displaced.

6. Does the onboard user interface include a display on the vessel that shows EM system health status and real time images from installed cameras? Yes ☐ No ☐

Comment

7. Is the number and position of cameras sufficient to capture necessary imagery to allow generation of the data fields set out in the EM requirements? Yes ☐ No ☐

Comment

8. Is the frame rate no lower than 5 frames per second and is the resolution no lower than 720p for any imagery requiring identification of species? Yes ☐ No ☐

Comment

9. Is the recorded imagery in a widely used video or image file format, such as MP4 or JPEG, or other compression standards that are able to be viewed and does it include a timestamp, location, and vessel identification information on the video or image? Yes ☐ No ☐

Comment

10. Does the geolocation device record vessel location coordinates and the associated date and time in a format capable of integration with EM Records? Yes ☐ No ☐

Comment

[4] The appropriate time interval may require regular review and updating.

11. Are EM hardware components utilized on deck and exposed to the elements (e.g., sensors and cameras) sufficiently dust and water resistant (e.g., IP66) and durable (e.g., corrosion, impact, and vibration resistant) to operate reliably under the range of conditions expected in their location on fishing vessels? Yes ☐ No ☐
Comment
12. Is onboard hardware tamper evident, including physical and/or software features, to mitigate the risk of intentional sabotage or malfunctions? Yes ☐ No ☐
Comment
13. Does the EM system generate a log file that allows an EM program to determine the operational health status of the system.? Yes ☐ No ☐
Comment

Item **Installation, Operation, and Service of onboard EM Systems**	**Standard Required** Installation, Operation, and Service of onboard EM Systems
EM system Installation The process of physically mounting cameras, GPS, and other sensors on a fishing vessel. Vessel Monitoring Plan A document that details how fishing activities and the EM system will operate on a specific vessel.	**WCPFC EMP expectation on the Installation, Operation, and Service of onboard EM Systems:** EM system installation CCMs SHOULD ensure that their EM Service Provider or their designated installer complies with the relevant EM standards. To this end, CCMs are encouraged to refer to Annex 1 (voluntary guidelines for EM system installation). The vessel owner or their designated representative: a. MUST provide information describing the vessel configuration and systems to facilitate EM system installation. b. MUST make the vessel and appropriate personnel (such as engineers, fishing master, multilingual staff, etc.) available and provide the EM Service Provider unfettered access, including to the ship's power supply, to complete EM system installation. Vessel Monitoring Plan a. Vessel owner or EM Service Provider MUST complete a Vessel Monitoring Plan and submit it to the CCMs DRC for approval. b. A copy of the approved Vessel Monitoring Plan SHOULD be maintained aboard the vessel at all times during fishing operations. c. Vessel Monitoring Plans MUST be updated and submitted to the EM Program at a frequency determined by the EM Program and anytime changes are made to information or requirements outlined in the VMP (e.g., new vessel contact information, change in EM System configuration, change in catch handling guidelines). d. The Vessel Monitoring Plan: i. MUST include contact information for the EM Service Provider, vessel owner(s), and vessel operator(s), and base manager(s) (if applicable). ii. MUST include general vessel information as specified in the EM data requirements. iii. MUST include a diagram, description, and photo(s) of the vessel layout that identifies where key fishing activities will occur on the vessel (e.g., hauling, sorting, discarding) and COULD include measurements of all items, tools, or areas on the vessel that EM to support estimation of lengths of fish caught. iv. A description of the EM setup: o MUST include the number and location of cameras including images of their installation location and an image from each camera's perspective, and include nighttime images, as appropriate, to demonstrate sufficient lighting. o MUST include a description and image of the location of all other components of the installed EM system (e.g., geolocations system, EM control system, sensors, power supply). o MUST include relevant details of system configuration settings, including: • Camera configuration settings (e.g., frame rates, resolution, bitrate) • Sensor units and threshold values, if applicable • Data recording frequencies and/or sensor triggers for recording, if applicable

Field and Technician Support Services The ongoing, in-person and remote assistance that EM service providers offer, including system maintenance, data collection, and technical troubleshooting.	• Software and Firmware versions • Spatial calibration settings, if applicable v. MUST include any catch handling procedures required to ensure that EM Records allow collection of the data fields set out in the EM data requirements (e.g., handling in view of cameras, allowable discard locations). See Annex 2 for references to existing catch handling procedures. vi. MUST include vessel duty of care responsibilities to prevent system malfunctions and ensure effective operation of the system, such as: o Verifying system functionality at the beginning and at regular intervals throughout the duration of each trip o Instructions for cleaning camera lenses vii. MUST include vessel responsibilities in the event of system malfunctions that describe the steps that must be taken. viii. MUST include details of what steps, if any, are required to ensure the transmission of the EM Records to the DRC. Field and Technician Support Services The vessel owner/operator: a. MUST follow duty of care responsibilities described in the Vessel Monitoring Plan. b. MUST report EM system malfunctions to the appropriate contact as outlined in the Vessel Monitoring Plan. This should be done as soon as is practicable, and include details of the date, time, and, if possible, the geolocation when the malfunction was first detected. c. MUST follow vessel responsibilities outlined in the Vessel Monitoring Plan in the event of system malfunctions. The EM Program: a. MUST define vessel responsibilities in the event of system malfunctions that describe the steps that must be taken under different failure scenarios. b. SHOULD respond to EM Service Providers or vessel owners/operators in a timely manner.
14. Have the appropriate personnel (such as engineers, fishing master, multilingual staff, etc.) provided the EM Service Provider unfettered access, including to the ship's power supply, to complete EM system installation.? Yes ☐ No ☐	
Comment	

15. Has the vessel owner or EM Service Provider completed a Vessel Monitoring Plan that includes contact information for the EM Service Provider, vessel owner(s), and vessel operator(s), and base manager(s) (if applicable) include general vessel information as specified in the EM data requirements, a diagram, description, and photo(s) of the vessel layout that identifies where key fishing activities will occur on the vessel (e.g., hauling, sorting, discarding) Does the description of the EM setup:

- Include the number and location of cameras including images of their installation location and an image from each camera's perspective, and include nighttime images, as appropriate, to demonstrate sufficient lighting.
- Include a description and image of the location of all other components of the installed EM system (e.g., geolocations system, EM control system, sensors, power supply).
- Include relevant details of system configuration settings, including:
    - Camera configuration settings (e.g., frame rates, resolution, bitrate)
    - Sensor units and threshold values, if applicable
    - Data recording frequencies and/or sensor triggers for recording, if applicable
    - Software and Firmware versions
    - Spatial calibration settings, if applicable
- Include any catch handling procedures required to ensure that EM Records allow collection of the data fields set out in the EM data requirements (e.g., handling in view of cameras, allowable discard locations.
- Include vessel duty of care responsibilities to prevent system malfunctions and ensure effective operation of the system, such as:
    - Verifying system functionality at the beginning and at regular intervals throughout the duration of each trip
    - Instructions for cleaning camera lenses
- Include vessel responsibilities in the event of system malfunctions that describe the steps that must be taken.
- Include details of what steps, if any, are required to ensure the transmission of the EM Records to the DRC.

Yes ☐ No ☐

Comment

16. Does the EM program define vessel responsibilities in the event of system malfunctions that describe the steps that must be taken under different failure scenarios? Yes ☐ No ☐

Comment

17. Does the vessel owner/operator report EM system malfunctions to the appropriate contact as outlined in the Vessel Monitoring Plan. Yes ☐ No ☐

Comment

Item	Standard Required
Data Review Center Analyzation of EM Records to generate EM Data. EM Analysis Software The DRC EM analysis software to facilitate the generation of EM Data from EM Records.	The standard for the data review center (DRC) is an entity with access to supporting EM analysis software used by EM analysts to analyze EM Records and generate EM Data. DRCs may serve individual CCMs, subregional groupings, or the entire WCPFC membership. They may also be administered by individual CCMs members, a sub-regional or regional body, or a third-party (commercial) provider. This SSP is not specific to any DRC structure and covers the required infrastructure (hardware and software) and training to analyze EM Records.
	WCPFC Expectation on the analyzation of EM Records to generate EM Data

EM Analysis Workstations DRC workstation(s) where EM Analysts will use EM analysis software to generate EM Data from EM Records.	EM Analysis Software The EM analysis software: a. MUST be compatible with the file types, data structures, syntax, and semantics of EM Records that will be analyzed with the software. b. SHOULD be the latest version of analysis software, including security patches c. SHOULD be able to display EM analyzed output: i. Display the vessel track on a map based on geolocation data integrated in the EM Records, with an option to display the geolocation data of each vessel. ii. Display synchronized imagery from all cameras simultaneously with zoom capability and other relevant imagery features. iii. Display a visual timeline with sensor readings or status, if applicable. iv. Display synchronized sensor data (including vessel heading and speed) and video imagery simultaneously, if applicable. d. SHOULD be able to spatially calibrate an image and measure the length of species brought onboard as required by the EM Program (e.g. through a digital measuring tool in the EM analysis software). e. SHOULD allow the EM Analyst to create annotations to mark events where fishing activity occurred within the EM records. f. SHOULD be able to extract and save segments of video and sensor data, including extraction and saving of still images and the ability to extract short duration video clips of catch. g. MUST be able to produce EM Data into a format compatible (or that can easily made compatible) with agreed EM data requirements for incorporation into WCPFC databases. h. SHOULD be able to import EM records (and related sensor, if applicable, and annotated data) from systems of other EM Service Providers. i. SHOULD have the ability to change the playback speed of the footage (e.g., 0.5x, 1x, 2x, 6x, 8x, 10x) EM Analysis Workstations a. MUST have hardware and software, or cloud-based platforms that enable effective EM analysis b. MUST have reliable data transmission capabilities sufficient for efficient streaming or download/upload of data required for EM

EM Analysts Reviews video footage using EM software to generate EM Data from EM Records and data collected from onboard camera systems to verify fishing activities, species idenfication, and ensure compliance with fishery regulations. Health Monitoring System Tools and processes to track, assess, and report the operational status of EM hardware and data collection systems on vessels. Storage of EM Records and EM Data EM raw and annotated data are stored to ensure accountability, auditability, regulatory compliance, and scientific value. The retention policy balances data transparency and operational needs with costs and privacy considerations.	Records analysis, reporting of EM Data, and storage of EM Records. c. MUST have proper ergonomics that support analyst well-being, quality, and efficiency. d. MUST be designed to minimize the risks to commercially sensitive information. The EM Analysts a. MUST complete an appropriate training program which covers materials including (but not limited to): species ID, basic fishing practices, and EM review processes). b. EM analysts MUST not be employees of a fishing company involved in the observed fishery or have other direct conflicts of interest. c. Training should cover the EM analysis process and relevant topics identified from the Agreed Minimum Standards and Guidelines for the Regional Observer Program (https://www.wcpfc.int/wcpfc-regional-observer-program-standards%20latest ;pg. 12). EM health Monitoring System a. The EM Program SHOULD have a health monitoring system to receive and display near real-time information of onboard EM System health status (System Health Status), this SHOULD include still images to verify functionality of onboard cameras (System Health Status) and geolocation data (Geolocation device). This system may be part of the DRC. b. If applicable, the onshore health monitoring system MUST receive any malfunction alerts (errors and warnings) that have been generated from the onboard health monitoring system. c. The health monitoring system SHOULD be able to display the latest geolocation of all covered EM Systems on a map. Storage of EM Records and EM Data a. EM records and associated EM data MUST be retained in accordance with any WCPFC audit requirements.
18. Does the DRC use EM analysis software to facilitate the generation of EM Data from EM Records in a format compatible with agreed EM data requirements for incorporation into WCPFC databases?	
Comment	
19. Do DRC workstations have hardware and software, or cloud-based platforms that enable effective EM analysis? Yes ☐ No ☐	
Comment	
20. Do the DRC workstations have reliable data transmission capabilities sufficient for efficient streaming or download/upload of data required for EM Records analysis, reporting of EM Data, and storage of EM Records? Yes ☐ No☐	

Comment
21. Do the DRC workstations have proper ergonomics that support analyst well-being, quality, and efficiency? Yes ☐ No ☐
Comment
22. Do the DRC workstations designed to minimize the risks to commercially sensitive information? Yes ☐ No ☐
Comment –
23. Have EM Analysts completed an appropriate training program which covers materials including (but not limited to): species ID, basic fishing practices, and EM review processes)? Yes ☐ No ☐
Comment
24. How many fully qualified EM analyst does the program have?
Comment
25. Does the program use EM analyst from other programs to assist? Yes ☐ No ☐
Comment
26. Are any EM analysts employees of a fishing company involved in the observed fishery or have other direct conflicts of interest? Yes ☐ No ☐
Comment
27. Does the onshore health monitoring system receive any malfunction alerts (errors and warnings) that have been generated from the onboard health monitoring system? Yes ☐ No ☐
Comment
28. Are EM records and associated EM data retained in accordance with any WCPFC audit requirements? Yes ☐ No ☐
Comment

Item **Data Fields** Data Fields and Minimum Data Standards are defined as Minimum Data Fields approved by the WCPFC for collection by the national and subregional EM programs.	**Standard Required** The agreed standard for "Data Fields, Management, Distribution and Use" will be that CCMs will use existing data field formats collected by their national or sub regional EM programs. **WILL Be UPDATED to REFLECT the ERandEM IWG** *SC3/IWGROP2) /TCC4/* Flag CCMs should cooperate to ensure timely access to EMP data and provision of the EMP data to the Commission**. WILL Be UPDATED to REFLECT the ERandEM IWG** *IWGROP4/WCPFC12/WCPFC19* EMP data should be submitted to the Secretariat or SPC where possible within 100 days of the observer disembarking purse seine vessels and within 120 days of the observer disembarking longline vessels**. WILL Be UPDATED to REFLECT the ERandEM IWG** *TCC9/WCPFC10* **WCPFC EMP expectation on the collection of EM Data Minimum Standard** EMP data includes data collected by EM systems on vessels when they are on the high seas or in zones other than the flag of the vessel, they are aboard. Programs and DRC's may continue to use their own formats for the annotated EM Data; however, DRC's will need to review the data collected by their observers to include the minimum data fields required by the Commission. Data collected by national or sub regional EM programs will be sent to the Commission designated data provider (SPC) or to the Commission Secretariat as soon as practical after the return of a vessel from their trip. (Within 100 days of the completion of a purse seine trip and within 120 days of the completion of a longline trip and within 90 days of completion of a carrier vessels transshipping on the high seas**.)** All EMP observer data is confidential and may not be distributed or given to any unauthorized organization or person without going through the Commission data access procedures and approval of the Executive Director of the WCPFC.

29. Does the program have included in their data format all the Minimum Standards Data Fields required by the Commission?

Yes ☐ No ☐

Comment

52. If 'No" to Q29- Does the national or sub regional EM program have in place a system to ensure the Commission Minimum Standard Data Fields are supplied.

Yes ☐ No ☐ N/A ☐

Comment

53. Does the program annotate EM Data from EM Video using English formats? Yes ☐ No ☐
Comment
54. If data is not annotated in English, is it translated before being sent to the data provider or the Commission Secretariat? Yes ☐ No ☐ N/A ☐
Comment
55. Does the program send the EMP data to the designated Commission Data Provider or to the Commission Secretariat? SPC ☐ Sect ☐
Comment
56. Does the program understand the Convention Text on what is EMP data? Yes ☐ No ☐
Comment
57. Do the national or sub regional EM program need assistance in sending ROP data to the designated Commission provider or to the Commission secretariat? Yes ☐ No ☐
Comment
TO BE UPDATED AT A LATER TIME TO REFLECT EM COVERAGE REQUREMENTS

Item	**Standard Required**
EM Coverage	Purse-seine vessels fishing within the area bounded by 20^0 N and 20^0 S exclusively on the high seas, on the high seas and in waters under the

EM coverage for each gear type is determined by the Commission.	jurisdiction of one or more coastal States, or vessels fishing in waters under the jurisdiction of two or more coastal States, shall carry effective January 2010, an observer from the Commission's Regional Observer Programme *WCPFC5 (CMM 2008-01)* Observer coverage is 5% annually for long liners agreed by the Commission to be in place by June 2012. *WCPFC4(CMM 2007-01/2018-05)* For transhipments on the high seas 100% observer coverage with the observer deployed on the receiving vessel *WCPFC6 (*CMM 2009-06)*
	ROP expectation on observer coverage
	Observer placements information by Commission authorised Regional Observer Programme ROP's should be conveyed to the Secretariat. Metrics for coverage for long liner include coverage; by trip; hook numbers; number of observer sea days; observed fishing days; observed sets. *IWG4* **CMM 2009-06 paragraph13 (a) and (b) have indications on the coverage for different types of vessels, however carrier vessels over 33 metres and transhipping from long liners at sea; 100 % coverage is required on the receiving vessel*.

75. Does the programme have enough observers to supply its national and international requirements?

Yes ☐ No ☐

Comment –

76. In the past has the programme submitted observer names and vessel boarding's to the ROP?

Yes ☐ No ☐

Comment –

77. Does the programme supply observers to another programme? Yes ☐ No ☐

Comment –

78. What metric does the programme use to work out coverage on long liners?

Trips: ☐ Number of observer sea days ☐ Observed fishing days; ☐

Hook Numbers ☐ Observed Sets ☐ Other (Specify) ☐

Comment –

Annex 1: Guidelines for administration of an EM program

EM system installation

The EM Service Provider or their designated installer SHOULD:

a. coordinate installation with the vessel owner or their designated representative.
b. install an onboard EM system that meets the performance standards described in onboard EM System Component and General Requirements.
c. ensure the onboard EM system meets the performance standards described in onboard EM System Component and General Requirements through system tests.
d. provide the necessary information for the vessel owner/operator or their designated representative to complete a Vessel Monitoring Plan (Vessel Monitoring Plans) or complete the Vessel Monitoring Plan on behalf of the owner/operator.
e. brief the vessel operator and crew member(s) and provide documentation on EM system operation, maintenance, and procedures to follow during regular operation and in the event of a system malfunction (Vessel Monitoring Plans).
f. MUST submit notification to the relevant EM Program of system installation in the agreed form that attests to the system functionality and its conformance with the performance standards described in onboard EM System Component and General Requirements.

Field and technical support services

The EM Service Provider, in a timely manner, SHOULD:

a. Communicate with vessel operators and the relevant EM Program to coordinate service needs, resolve specific program issues, and provide feedback on program services.
b. Provide maintenance and support services, including software and firmware updates, such that all installed EM systems perform according to the performance specifications described in onboard EM System Component and General Requirements and that field services are scheduled and completed with minimal delays to minimise disruption to fishing operations.
c. Provide technical assistance to vessels upon request on EM system operations, diagnosing causes of system malfunctions, and providing assistance for resolving malfunctions. This assistance SHOULD be available 24 hours a day, seven days a week, year-round. This service must be provided in the relevant languages as defined in the program specifications.
d. Submit to the relevant EM Program, and the EM Certifier, where appropriate, reports of all requests for technical assistance from vessels and service calls that include:
    i. The name and designation of the vessel point of contact
    ii. The date(s) and time a request for service was made.
    iii. The date(s) and time(s) when the EM Service Provider called or visited the vessel to provide technical assistance.

iv. A description of the issue.

v. A description of how the issue was resolved, including actions completed during all service calls or visits in response to the request for service.

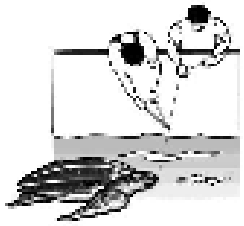
vi. The date and time the issue was resolved.

Annex 2: WCPFC Catch Handling Procedures for Species of Special Interest

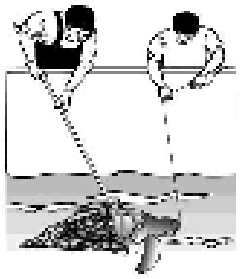
WCPFC Guidelines for the Handling of Sea Turtles

If a turtle is caught, the following steps should be taken to give it the best possible chance of survival. Operators of longline fishing vessels should follow Steps A to E if a sea turtle becomes hooked, and Steps A, C, D and E if it is entangled. If a sea turtle becomes entangled in a purse seine net, then operators should stop net roll as soon as the turtle comes out of the water, disentangle the turtle without injuring it and before resuming the net roll, then follow Steps A, C, D and E.

A **Assess the turtle's size: release the turtle if it is too big to handle safely, otherwise bring it on board without damaging it further**

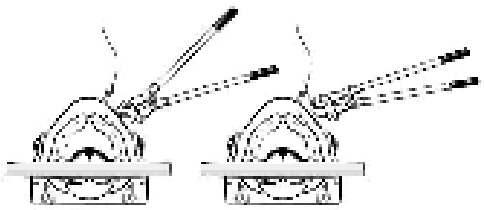


If the turtle is too large to bring on board, stop the vessel and bring the turtle as close to the boat as possible without putting too much strain on the line. This is especially important if the turtle is hooked rather than entangled. Cut the line as close to the hook as practical and remove tangled line from before the turtle swims away.



If the turtle is small then ideally use a dip net to lift the turtle on board. When bringing the animal on board, do not damage it further by lifting it using the hooked line or gaffing its body.

B **Once the turtle is on board, place a piece of wood in the turtle's mouth so it cannot bite, then cut the hook or line**

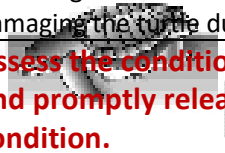


If the hook is in the mouth, use a de-hooker to remove the hook from the turtle.

Using a bolt cutter to remove the barb of the hook before removing the hook itself can reduce the chance of damaging the turtle during de-hooking.

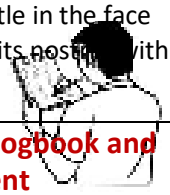
If the insertion point of the hook is not visible, remove as much line as possible without pulling too hard on the hook itself, and cut the line as close to the hook as practical.

C **Assess the condition of the turtle before releasing it. When the turtle has recovered its strength, gently and promptly release it to the water. Resuscitation treatments may be applied to animals in bad condition.**



If the turtle is sluggish or not active when lifted on board, it may have water in its lungs. In this case the rear flippers should be raised about 20cm off the deck while it is recovering.

If practicable, place the turtle in a secure shaded location of the boat and cover its body with wet towels. Do not spray the turtle in the face with water or cover its nostrils with the towel.



D **Carefully return the turtle to the water**

E **Record the interaction in your logbook and inform your fisheries department**

	Gently put the turtle in the water head first, after slowing down or stopping the fishing vessel. Ensure that the turtle is clear of the vessel before motoring off.		Identify and record the turtle species, if possible, and record any tag numbers.

HANDLING OF TURTLES ENTANGLED BY LONGLINE GEAR

The point of this guidance is to encourage removal of as much line as possible before the turtle is free to swim away.

Visually assess whether the turtle is **hooked or entangled**. If it is entangled then the following steps should be followed, depending on whether the turtle is **dead or alive**. Note that it may be difficult to tell if the turtle is dead or alive when it is still in the water.

(1) Turtle looks dead and is too big to bring onboard:

If the turtle is too **big** to bring onboard, cut loose as much of the tangled lines as possible using a line cutter.

(2) Turtle is alive but too big to bring onboard:

Visually assess if the turtle is:

A) Entangled only: use the line cutter to cut off the tangled lines in the water.

B) Entangled and hooked externally: remove the hook if possible and then use the line cutter to cut off the tangled lines in the water.

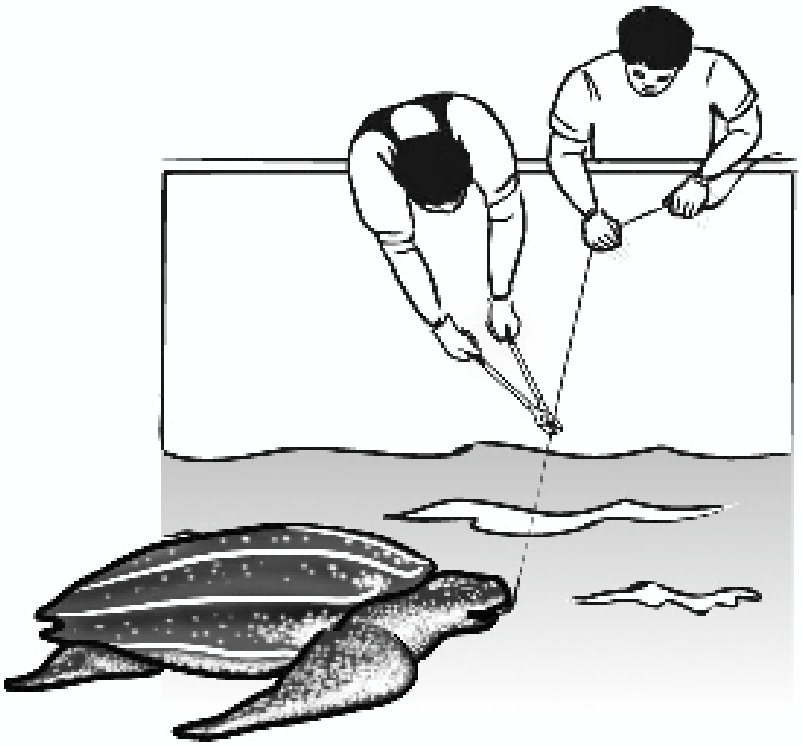
C) Entangled and hooked internally: follow the established procedure for handling a hooked turtle.

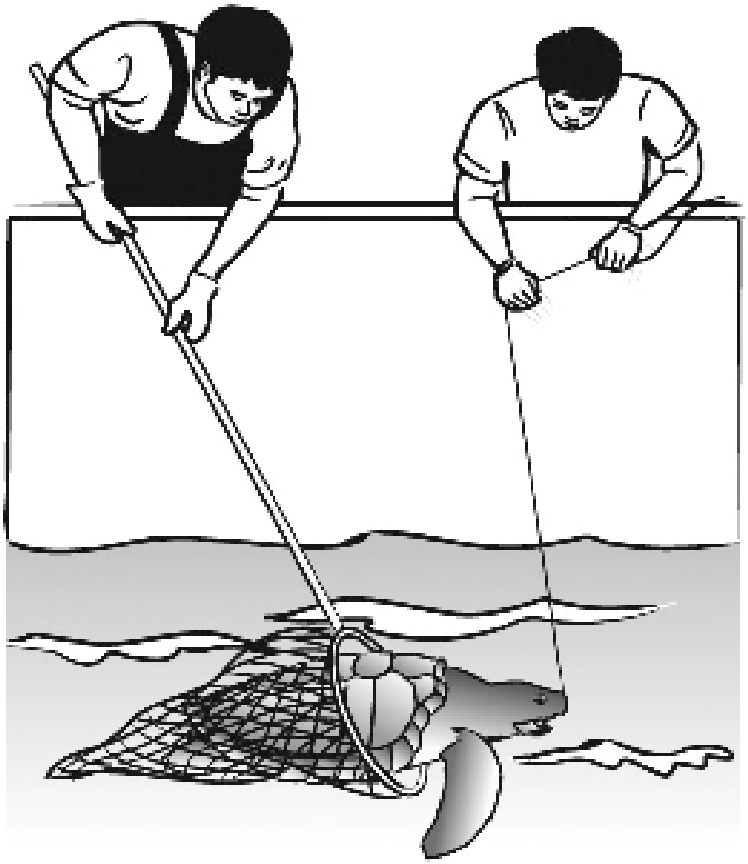
D) Entangled turtle (heavily entangled): a gaff may be used to restrain the turtle by the tangled lines. Use the line cutter to cut off the tangled lines in the water, taking care not to cut the lines that are used to control the turtle before other lines have been cut and removed. More than one person may be required to assist, in order to prevent the turtle swimming away while still tangled.

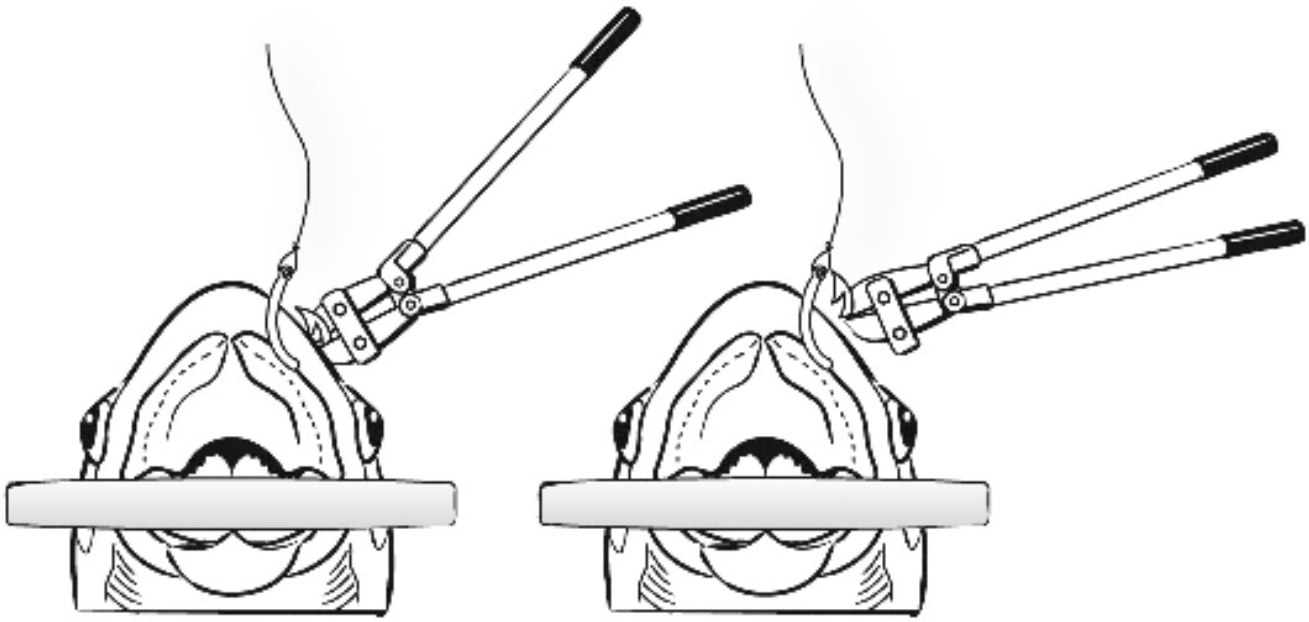
(3) Turtle is small enough to be brought onboard:

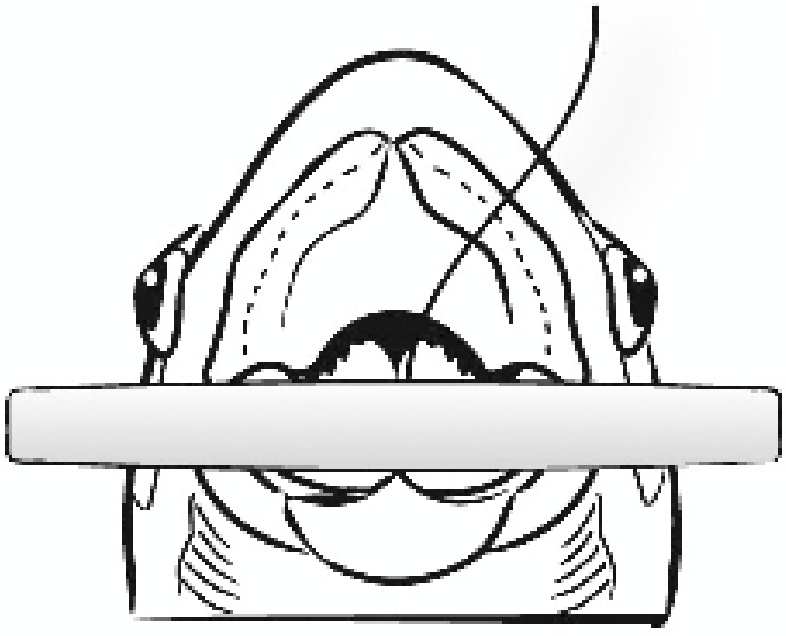
If the turtle is **alive** then established guidelines should be applied (comatose handling, revival, and release). If it is **dead**, it should be brought on board to be measured and identified.

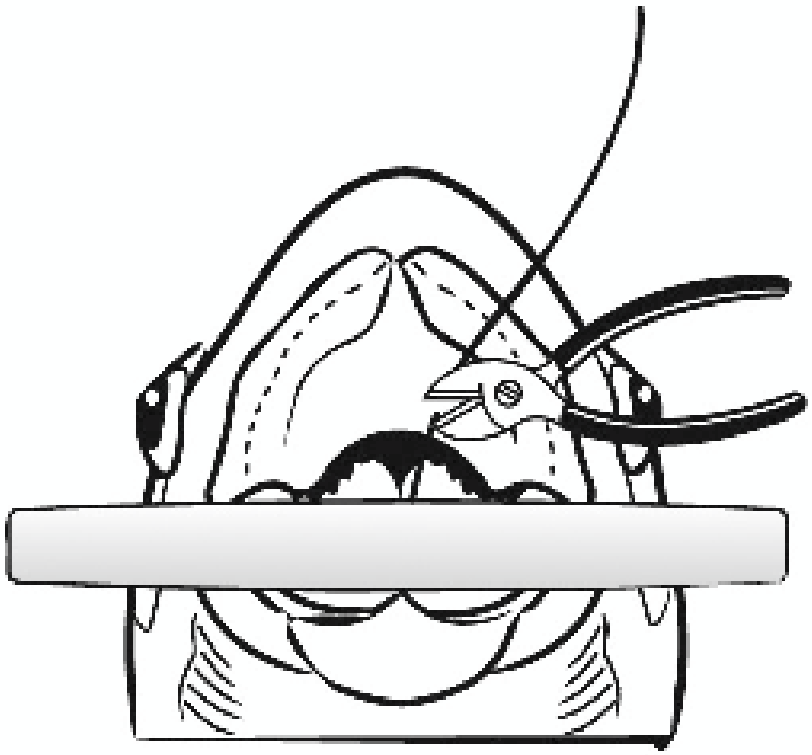
WCPFC Guidelines for the Handling of Sea Turtles - Graphics

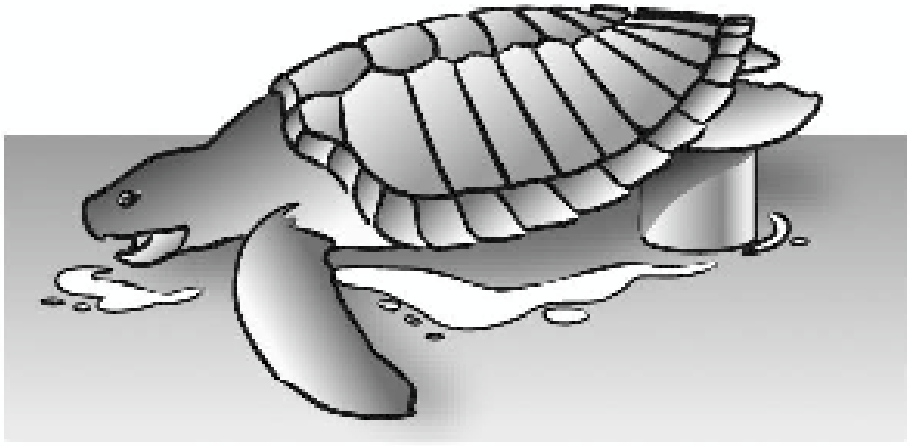


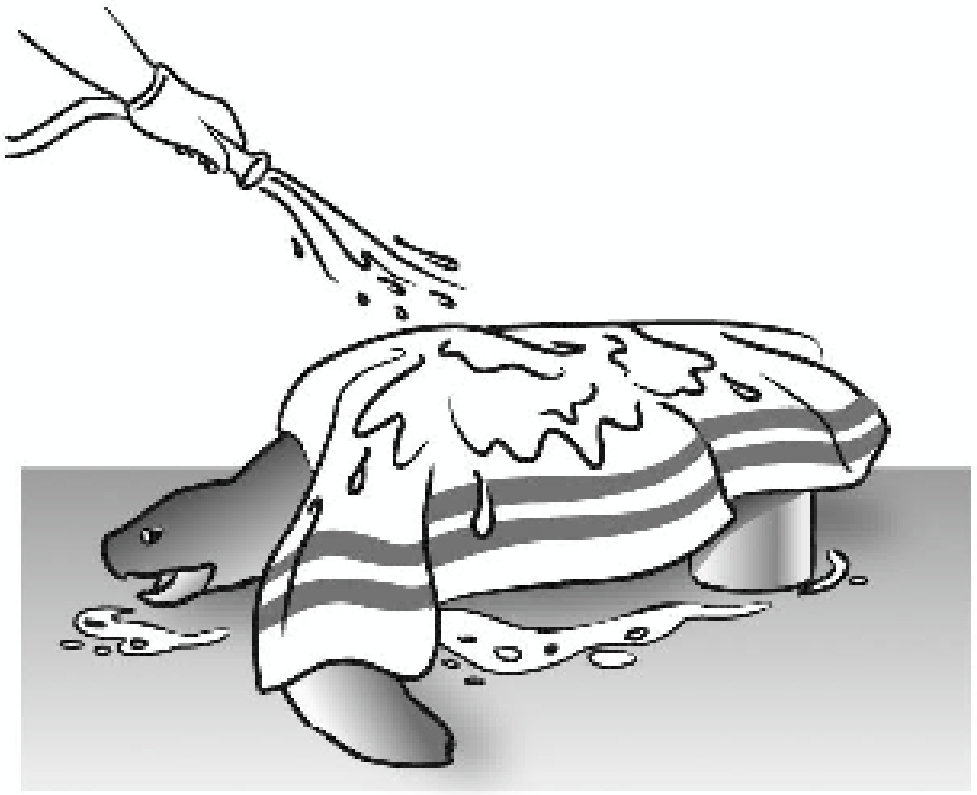


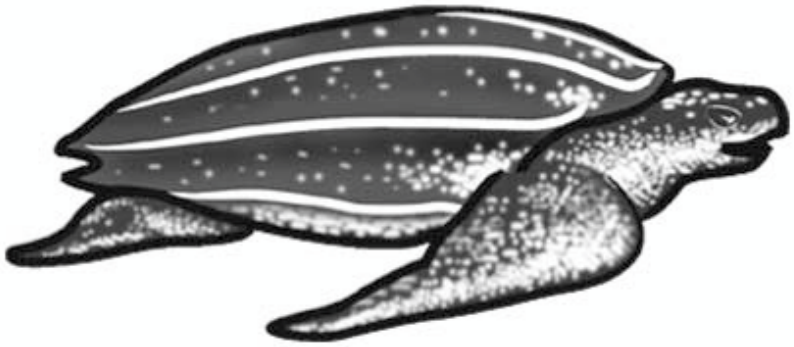












Attachment N*

COMMISSION
SIXTEENTH REGULAR SESSION
Port Moresby, Papua New Guinea
5-11 December 2019

SAFE HANDLING AND RELEASE GUIDELINES FOR SEABIRDS

Suppl CMM 2018-03

Bycatch in pelagic longline fisheries is one of the greatest threats to seabirds, particularly albatrosses and petrels.

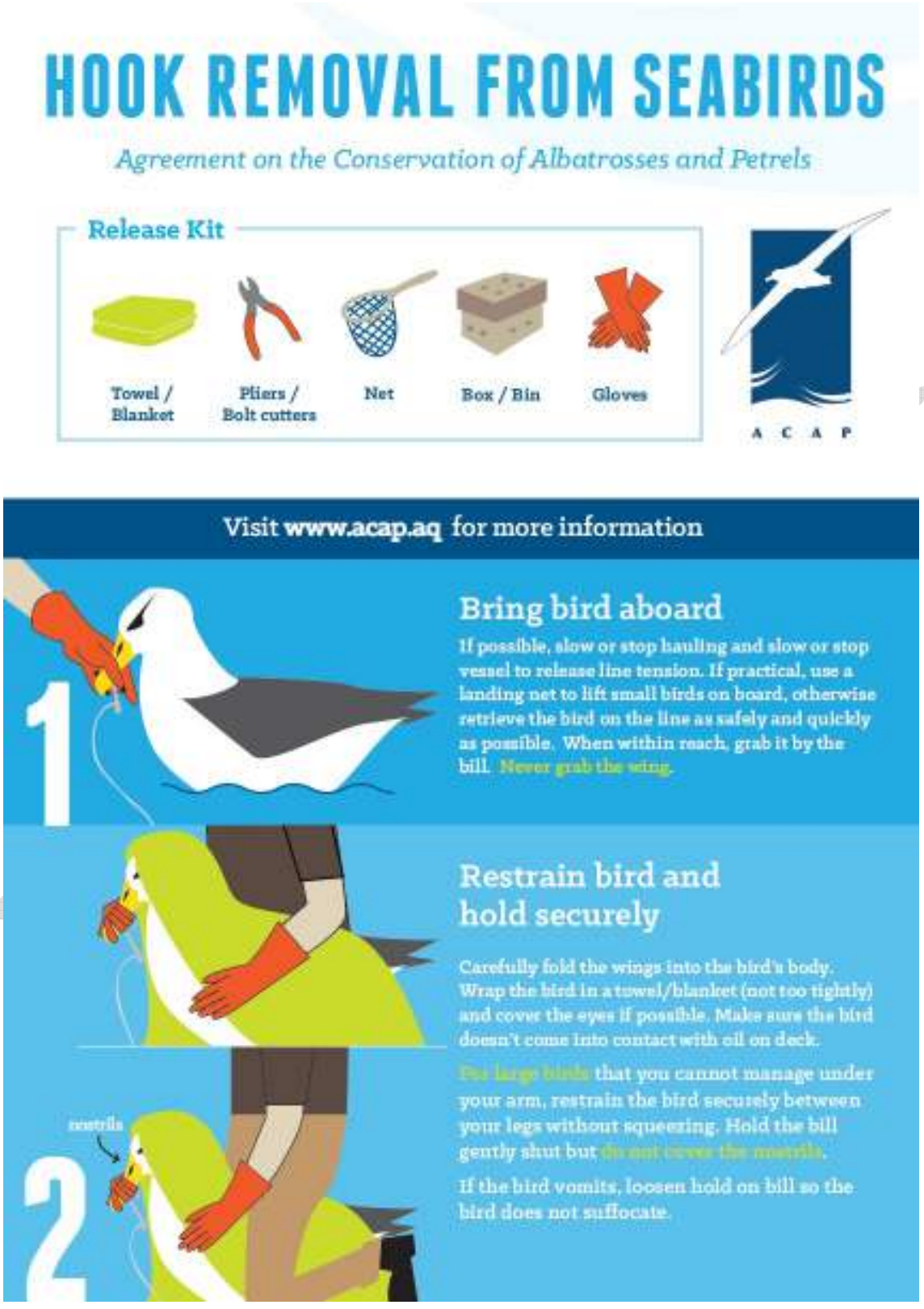
This proposal is aimed at meeting the requirements of para 11 of CMM 2018-03 - ensuring that seabirds captured alive are released alive and in as good a condition as possible and that, wherever possible, hooks are removed without jeopardizing the life of the seabird concerned.

SC15 noted that some seabirds are captured and released alive, with higher chances of survival when safe handling procedures are implemented. Together with the implementation of effective seabird bycatch mitigation measures, safe handling and release of seabirds will help reduce the impact of pelagic longline and other hook fisheries bycatch on these vulnerable seabirds.

The guidelines on Hook Removal from Seabirds, developed by the Agreement on the Conservation of Albatrosses and Petrels (ACAP), are recommended as non-binding guidelines for safe handling and release of live caught seabirds in all WCPFC pelagic longline and other hook fisheries.

The current ACAP guidelines, in a range of languages, are freely available on the ACAP website: https://acap.aq/en/resources/bycatch-mitigation . The format of the advice has been tailored to fishing vessel crew. The current ACAP guidelines are provided in Appendix 1.

Appendix 1. Hook release guidelines developed by the Agreement on the Conservation of Albatrosses and Petrels



OR

OR

3

Remove the hook

If the hook is visible

Use pliers (or bolt cutters for large hooks) to cut through the hook shaft (or to flatten the barb). Pull the hook back out of the bird.

If the hook is swallowed and removal is possible

A second person can find the hook position externally by feeling along the neck or internally by following the line to the hook. Gently force the tip of the hook so that it bulges under the skin of the bird (for large birds, this may be easier if you reach down the bird's throat and hold the hook). If you can get a good grip on the hook, push the tip of the hook though the skin and remove.

Never try to extract the hook backwards

If hook removal is not possible

Either because removing the hook will cause further damage to the bird or the hook is too deeply ingested, cut the line as close to the hook as possible and leave the hook in the bird.

4

If the bird is exhausted or waterlogged

If possible, place in a ventilated box or bin in a quiet, dry, shaded place to recover for an hour or two. Otherwise, contain bird in a quiet dry area, away from oil. The bird is ready for release when the feathers are dry, bird is alert and able to stand.

5

Release the bird

If the bird is strong and mostly dry, release it onto the water (but clear of the vessel) immediately after hook removal. Having again first grabbed the bill, lift and slowly lower the bird onto the water letting go of the bill last.

Where birds cannot be lowered directly onto water, lift and release the bird from the side of the vessel into the wind letting go of the bill at the same time. The bird may remain on the water for some time after release.

HOOK REMOVAL FROM SEABIRDS

Visit **www.acap.aq** for more information

COMMISSION FIFTEENTH
REGULAR SESSION
Honolulu, Hawaii, USA
10-14 December 2018

BEST HANDLING PRACTICES FOR THE SAFE RELEASE OF SHARKS (OTHER THAN WHALE SHARKS AND MANTAS/MOBILIDS)[1]

The following are recommended non-binding guidelines of best handling practices of sharks for both purse seine and longline fisheries:

Safety First: These guidelines should be considered in light of safety and practicability for crew. Crew safety should always come first. Crew should wear suitable gloves and avoid working around the jaws of sharks.

For all gear types, keep animals in the water if possible. If necessary to land on deck, minimize time and release shark to the water as soon as possible.

Purse Seine

Do's (make sure that "do" graphics are clearly labelled as examples only):

If in purse seine net:

- Release sharks while they are still free-swimming whenever possible (e.g. back down procedure, submerging corks, cutting net)
- For sharks that cannot be released from the purse seine net, consider removing them using a hook and line.

If in brail or on deck:

- For sharks that are too large to be lifted safely by hand out of the brailer, it is preferable they are released using a purpose-built large-mesh cargo net or canvas sling or similar device[2]. If the vessel layout allows, these sharks could also be released by emptying the brail directly on a ramp held up at an angle that connects to an opening on the top deck railing, without need to be lifted or handled by the crew.
- Generally, small sharks are fragile and need to be handled very carefully. If this can be done safely, it is best to handle and release them with two people, or one person using both hands.
- When entangled in netting, if safe to do so carefully cut the net away from the animal and release to the sea as quickly as possible with no netting attached.

[1] These guidelines are appropriate for live individuals of shark species to be released under no-retention policies as well as any other live sharks to be released voluntarily.
[2] As recommended in document SC8-EB-IP-12 (Poisson et al. 2012)

Don’ts (graphics are useful here):

- Do not wait until hauling is finished to release sharks. Return them to the sea as soon as possible.
- Do not cut or punch holes through the shark’s body.
- Do not gaff or kick a shark and do not insert hands into the gill slits.

Longline

Do’s (make sure that “do” graphics are clearly labelled as examples only):

- The preference is to release all sharks while they are still in the water, if possible. Use a dehooker to remove the hook or a long-handled line cutter to cut the gear as close to the hook as possible (ideally leaving less than 0.5 meters of line attached to the animal).
- If de-hooking in the water proves to be difficult, and the shark is small enough to be accommodated in a dip net, bring it on board and remove as much gear as possible by using a dehooker. If hooks are embedded, either cut the hook with bolt cutters or cut the line at the hook and gently return the animal to the sea.
- For all sharks that are brought on deck, minimize time before releasing to the water.

Don’ts (graphics are useful here):

- Do not strike a shark against any surface to remove the animal from the line.
- Do not attempt to dislodge a hook that is deeply ingested and not visible.
- Do not try to remove a hook by pulling sharply on the branchline.
- Do not cut the tail or any other body part.
- Do not gaff or kick a shark, and do not insert hands into the gill slits.

Additional recommendation:

Knowing that any fishing operation may catch sharks, several tools can be prepared in advance (e.g. canvas or net slings or stretchers for carrying or lifting, large mesh net or grid to cover hatches/hoppers in purse seine fisheries, long handled cutters and de-hookers in longline fisheries).

COMMISSION TWELFTH
REGULAR SESSION
Bali, Indonesia
3-8 December 2015

GUIDELINES FOR THE SAFE RELEASE OF ENCIRCLED WHALE SHARKS[1]

General principles

- Safety of the crew is a paramount consideration.
- When releasing encircled whale sharks, the stress the animal receives should be minimized to the extent possible.
- The following possible release methods should be used as general guidelines.
- The effectiveness of the following possible release methods has not been fully evaluated. Further scientific research is necessary in order to investigate survival after the release by various release methods. Therefore, CCMs are encouraged to conduct analysis on methods used by their purse seine vessels. In addition, several agencies have initiated a program of satellite tag deployments by experienced observers to assess survival of encircles animals associated with various release techniques.
- The appropriate release method should be chosen in a flexible manner depending on the circumstances and condition of the particular purse seine set, e.g. the size and orientation of the encircled animal, amount of fish in the purse seine set, weather conditions and brailing operation style.

As noted in the TCC9 Summary Report, Para 318, the PNA requires that when a whale shark is encountered in a purse seine net in PNA waters the net roll must be immediately stopped and the whale shark released.

In the WCPFC Convention Area the following actions are not recommended when releasing encircled whale sharks (see WCPFC-SC11-2015/EB-WP-03 Rev.1):

- Vertically lifting sharks by tail
- Pulling sharks by a loop hooked around its gill or holes bored into a fin
- Gaffing
- Leaving attached any towing ropes.
- Brailing whale sharks larger than 2 meters
- Brailing whale sharks onto the deck ---

[1] Originally adopted on 8 December 2015. The title of this decision was amended through the Commission decision at WCPFC13, through adopting the SC12 Summary Report which contains in paragraph 742: "SC12 agreed to change the title of 'Guidelines for the safe release of encircled animals, including whale sharks' to 'Guidelines for the safe release of encircled whale sharks."

COMMISSION FOURTEENTH
REGULAR SESSION
Manila, Philippines
3 – 7 December 2017

BEST HANDLING PRACTICES FOR THE SAFE RELEASE OF MANTAS & MOBULIDS

At WCPFC13, the Commission designated six species of manta and mobulid rays as key shark species for assessment in December 2016 and called for the development of safe release guidelines for manta and mobulid rays during SC13.
The following are recommended non-binding guidelines of best handling practices of manta and mobulid rays for both purse seine and longline fisheries:

Purse Seine

Do's:

- Release rays while they are still free-swimming whenever possible (e.g. back down procedure, submerging corks, cutting net).
- It is preferable that larger rays (>60 kg), that are too large to be lifted safely by hand are brailed out of the net and released using a purpose built large-mesh cargo net or canvas sling or similar device as recommended in document SC08-EB-IP-12 (Poisson *et al*. 2012,
- Good practices to reduce the mortality of sharks and rays caught incidentally by the tropical tuna purse seiners). [Note: It is preferable that release nets or devices are prepared prior to each set.]
- It is preferable that small (< 30 kg) and medium rays (30-60 kg) are handled by 2 or 3 people and carried by the sides of its wings or preferably using a purpose-built cradle/stretcher while ensuring the safety of the crew.
- When entangled in netting, carefully cut the net away from the animal and release to the sea as quickly as possible while ensuring the safety of the crew.

Don'ts:

- Do not leave a ray on deck until hauling is finished before returning it to the sea.
- Do not punch holes through the bodies of rays (e.g. to pass a cable or line through for lifting the ray).
- Do not gaff, drag, carry, lift or pull a ray by its "cephalic lobes" or tail or by inserting hooks or hands into the gill slits or the spiracles.

Longline

Do's:

- For small rays, gently bring on board and remove as much gear as possible by backing the hook out. If hooks are embedded, either cut the hook with bolt cutters or cut the line at the hook and gently return the animal to the sea.
- For medium to large rays (>30 kg), leave the animal in the water and use a dehooker to remove the hook or a long-handled line cutter to cut the gear as close to the hook as possible (ideally leaving < 0.5 meters of line attached to the animal).

Don'ts:

- Do not hit or slam a ray against any surface to remove the animal from the line.
- Do not attempt to dislodge a deeply hooked or ingested hook by pulling on the branch line or using a dehooker.
- Do not attempt to lift medium to large (>30 kg) rays aboard vessel.
- Do not cut the tail.
- Do not gaff, drag, carry, lift or pull a ray by its "cephalic lobes" or tail or by inserting hooks or hands into the gill slits or the spiracles.

Additional recommendation:

Knowing that any fishing operation may catch rays, several tools can be prepared in advance (e.g. canvas or net slings or stretchers for carrying or lifting, large mesh net or grid to cover hatches/hoppers in purse seine fisheries, long handled cutters and de-hookers in longline fisheries).