Food and Agriculture Organization of the United Nations

Indian Ocean Tuna Commission
Commission des Thons de l'Ocean Indien
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IOTC ELECTRONIC MONITORING PROGRAM STANDARDS

PREPARED BY: IOTC WGEMS, 10 NOVEMBER 2022

PURPOSE

To agree and adopt IOTC Regional Electronic Monitoring Program Standards as required by the WGEMS Terms of Reference and Resolution 22/04 for the IOTC Scientific Committee and Commission endorsement.

BACKGROUND

Electronic Monitoring Systems is a proven technology to collect fishery information, including when external circumstances prevent human observers from being deployed onboard, and complement human observers to address the data requirements under IOTC Resolution 22/04 On a Regional Observer Scheme.

The IOTC Scientific Committee in 2020 (SC23) noted that EMS is a very promising tool for enhancing observer coverage and complement data collected by onboard observers. IOTC SC23 also recommended that an ad-hoc, intersessional Working Group on the development of EM Programme Standards be constituted to further progress with the definition of EMS minimum standards as well as on the implementation of electronic monitoring projects by CPCs in support of the Regional Observer Scheme (ROS). The Commission at its 25th meeting (June 2020) endorsed the recommendation of the Scientific Committee and created the ad-hoc working group on the Development of Electronic Monitoring Programme Standards (WGEMS).

The WGEMS adopted its Terms of References and the WGEMS workplan, which were subsequently endorsed by the Scientific Committee in 2021 and, recently, by the IOTC Commission at its annual meeting on May 2022. The endorsed IOTC WGEMS Terms of References (see Appendix IV of IOTC-2021-WGEMS01-R) identify the need to develop and adopt EM Program Standards - covering program objective, purpose, scope, roles/responsibilities, guiding principles and vessel monitoring plans- and EM Systems and Data Standards – covering the technical standards (for vessel EM equipment), the logistical standards (for data retrieval, back up, chain of custody and frequency) and data analysis standards (including data review, quality, coverage, submission, storage, ownership, etc.-

Moreover, the IOTC Regional Observer Scheme (ROS) established under Resolution 22/04 aims to collect verified catch data and scientific information. IOTC Resolution 22/04 requires the collection of independent data on fishing activity through human observers for at least 5% of the operations for each gear type. Resolution 22/04 on a Regional Observer Scheme requests "*the IOTC Scientific Committee, **in collaboration with the Compliance Committee, to develop and agree on minimum standards for the use of EMS for purse seine, longline, bait boat (pole and line), handline, and gillnet fleets by 2023 at the latest**, including on modalities of the substitution of the human observer coverage by an EMS, taking into account factors such as, the principles and regulations regarding minimum safe manning requirements. The Commission may consider and adopt these standards by 2024 in a separate Resolution*". Moreover, the Resolution stated that "*Once the **EMS standards are adopted and providing CPCs meet the minimum mandatory ROS data reporting standards, the minimum human observer coverage provided for in paragraph 3 may be complemented or substituted by means of an EMS**. To ensure the minimum mandatory ROS data reporting standards are met, the EMS may be complemented by port sampling and/or other Commission approved data collection methods. And CPCs are encouraged to use an EMS to improve the collection of scientific data before the standards mentioned in paragraph 4 are adopted.*"

DISCUSSION

The 2nd meeting of the WGEMS (June, 2022), including the participation of different stakeholders (i.e., scientists, EMS designers/vendors, fishermen, representatives from the industry, managers), discussed the potential for electronic monitoring (EM) implementation for tuna fisheries in the IOTC and to develop a roadmap and next steps in progressing these initiatives. The WGEMS also discussed EM Program Standards. The WGEMS agreed to an intersessional process to continue discussing EM Program Standards. **This paper**

presents the agreed IOTC EM Program Standards for the implementation of EMS for IOTC fisheries arising from the WGEMS intersessional work.

The paper focuses on EM Program Standards; including program objectives, purpose, scope, roles/responsibilities, guiding principles and vessel monitoring plans, that would aid to standardize Electronic Monitoring Systems in the Indian Ocean region. This IOTC EM Program Standards in conjunction with EMS Data Standards will define the requirements for the implementation of the IOTC Regional Electronic Monitoring Program.

Participants at the WPDCS18 are requested to discuss, consider and adopt the WGEMS agreed EM Program Standards as requested by WGEMS Terms of References and Resolution 22/04.

RECOMMENDATION/S

That the WPDCS18:

1) **NOTE** paper IOTC–2022–WPDCS18–33, which provides the WGEMS agreed IOTC EM Program Standards.
2) **ADOPT** IOTC EM Program Standards and **RECOMMEND** to the Scientific Committee for its consideration and potential endorsement.

APPENDICES

Appendix A: WGEMS Agreed IOTC Electronic Monitoring Program Standards.

Appendix A

IOTC ELECTRONIC MONITORING PROGRAM STANDARDS

General

- National/Regional data collection Programs using Electronic Monitoring Systems (EMS) that are certified as meeting the minimum standards of the Electronic Monitoring Program (EMP) as adopted by IOTC may be included within IOTC Regional Electronic Monitoring Program (REMP).
- IOTC REMP shall be coordinated by the IOTC Secretariat.

Objectives

- The objective of the IOTC REMP is to collect, via EMS, verified catch data and other scientific data related to the fisheries for tuna and tuna-like species in the IOTC area of competence and achieve the EM observer/review coverage to meet the requirements of IOTC Observer Resolution on Regional Observer Scheme.

Purpose:

- The purpose of IOTC REMP is to allow CPCs to utilise EMS to collect data to assist CPCs in meeting the requirements of IOTC Observer Resolution on Regional Observer Scheme, including in situations where onboard observer coverage is low or non-existent.
- The REMP aims to improve the quantity and quality of fishery data and the monitoring of IOTC fisheries and address gaps in the collection and verification of fishery data. The REMP may also in the future help CPCs meet the requirements of other IOTC Resolutions.

Scope:

- The IOTC's REMP and associated minimum EM Program and EMS Data Standards (including this standard) **apply only to IOTC CPCs who are developing or who have implemented EMS as a data collection tool** to meet the requirements of the IOTC Observer Resolution on Regional Observer Scheme.
- IOTC's REMP provides a framework for the development of EMS in the following IOTC fisheries:
    - Purse-seine vessels over 24 meters length overall and under 24 meters LOA when fishing outside their EEZs,
    - Longline vessels over 24 meters length overall and under 24 meters LOA when fishing outside their EEZs,
    - Gillnet vessels over 24 meters length overall and under 24 meters LOA when fishing outside their EEZs,
    - Pole and line vessels over 24 meters length overall and under 24 meters LOA when fishing outside their EEZs,
    - Other gear types under 24 meters length overall (when fishing in the high seas).
- IOTC's REMP or any National EMP, under IOTC's REMP, shall ensure that the data collected through EMS are documented and that all ROS minimum data standard requirements (e.g., "Mandatory Reporting"), if necessary complemented with any additional monitoring program (e.g., port sampling, biological sampling, etc.), are collected by EMS.

Definitions:

- ***Electronic Technologies (ET)***: any electronic tool that is used to support fisheries-dependent data collection, both on shore and at sea, including electronic reporting (ER) and electronic monitoring (EM).
- ***Electronic Reporting (ER):*** the use electronic systems (application, software, form or file) to record, store, receive and transmit fisheries data.

- ***Monitoring:*** the requirement for the continuous collection of fishery-related data.
- ***Electronic Monitoring (EM):*** the use of electronic devices to record fishing vessel's activities using video technology linked to a Global Position Systems (GPS), which may include sensors.
- ***Electronic Monitoring System (EMS):*** the system comprising the vessel and shore-based components for collecting, transmitting and reviewing EM records, reporting of EM data and implementing an EM Program.
- ***EM Program:*** a process administered by a national or regional administration that regulates the use of EMS on vessels to collect and verify fisheries data and information responsible through an implementation of an EMS in a defined area and/or fishery.
- ***EM Program standards:*** the agreed standards, specifications and procedures (SSP) governing the establishment and operation of an EM Program, applicable to all components of the EMS.
- ***EM data standards:*** the agreed subset of data requirements by the IOTC Regional Observer Scheme (ROS) that could be collected by the EMS.
- ***EM records:*** Imagery, and possibly sensor, raw data linked to positional data collected by an EM equipment that can be reviewed to produce EM data.
- ***EM data***: processed/analysed data produced through review of EM records that conforms with the EM data standards.
- ***EM equipment:*** a network of electronic cameras, sensors and data storage devices installed on a vessel and used to record the vessel's activities.
- ***Vessel Monitoring Plan (VMP):*** The vessel's EM equipment characteristics and how the vessel's EM equipment is installed and configured to monitor fishing activites and meet the EM Program and EM Data Standards as required by the IOTC Regional Electronic Monitoring Program.
- ***EM review:*** the review of EM records by EM observers/reviewers to produce EM data.
- ***EM observer/reviewer:*** a person qualified to review EM records, store and produce EM data in accordance with the EM Data standards and analysis procedure.
- ***EM review system:*** application software used by the EM observer to review the EM records and produce the processed EM data as per the EM data standards.
- ***EM review center:*** local, national, or regional office facility where EM records are received and reviewed to produce and store EM data.
- ***EM review provider:*** a third-party provider of EM review services to review EM records to produce EM data. The same third-party organization can provide both the EM equipment and EM review services but they can also be supplied by different providers.
- ***EM installation coverage:*** the proportion of vessels by fleet that has EM equipment installed that is operational.
- ***EM record coverage:*** the proportion of fishing effort for which EM records are collected by installed EM equipment.
- ***EM observer/review coverage:*** the proportion of fishing effort for which EM records are reviewed to produce EM data and submitted to the IOTC.
- ***EM service provider:*** a third-party provider of EM equipment (and/or system), technical and logistical services to maintain the EM equipment and monitor its proper functioning.

EM Systems

- EMS should be approved and accredited by an appropriate IOTC body (e.g., IOTC WGEMS/WPDCS) or CPCs to ensure that the minimum standards of the REMP (and ROS) are met, including EM equipment installation (through an EM Vessel Monitoring Plan), collection of data consistent with ROS minimum data standards, EM records reviewed by accredited companies/organizations and independence of EMS are maintained. In case that CPCs approved the EMS the CPC shall present such plan to the IOTC relevant bodies (e.g., WGEMS, WPDCS) in accordance with IOTC and national relevant confidentiality resolutions.

Data:

- EM data submitted by Regional or National EMPs are subject to Resolution 12/02 *on data confidentiality policy and procedures* concerning the requirements for sharing data in the public domain (e.g., the level of stratification to apply in order to prevent activity from a single vessel to be clearly identified from the published data) and the procedures for the safeguard of records.
- EM data collected via EM should be provided in compliance with the requirements established by the Commission in Resolution 15/01 on the recording of catch and effort data by fishing vessels in the IOTC area of competence, Resolution 15/02 on mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs) and IOTC Observer Resolution on Regional Observer Scheme.
- National EM Programs EM data should be submitted to IOTC in accordance with the electronic data format specifications provided by the IOTC Secretariat and adopted by the IOTC Commission, in order for data to be incorporated in the IOTC Regional Observer Scheme database. The EM data should be properly marked in the database to be distinguished from data collected through onboard human observers.

Roles

- *IOTC Commission:*
    - To monitor and provide oversight of the implementation of the REMP, including those implemented through National EM Programs.
    - To adopt and revise, when necessary, minimum standards for the EM Program, technical specifications, and associated data collection.
    - To agree on overall EM observer/review coverage through IOTC Observer Resolution on Regional Observer Scheme.
    - To develop and adopt a REMP implementation plan.
    - When necessary, the Commission may contract Regional EM review centers to review EM records obtained in the frame of the REMP.
    - To ensure sufficient financial resources to effectively administrate IOTC's REMP.
    - To review IOTC's REMP after an initial period (e.g., 3 years) of IOTC's REMP implementation.
- *IOTC CPCs:*
    - In case they choose EMP to meet IOTC Observer Resolution on Regional Observer Scheme, to ensure that EM equipment installed on fishing vessels under its flag and the EMS implementation complies with the requirements established by the Commission for the purpose of IOTC's REMP.
    - To require that a Vessel Monitoring Plan (see below) is developed for each vessel equipped with EM equipment and delivered to the CPC competent authorities.
    - To ensure that EM equipment are installed in their vessels following a Vessel Monitoring Plan to collect the required data and to comply with the coverage objectives agreed by the Commission.
    - To ensure that EMS implementation is consistent with IOTC's REMP and its minimum standards.
    - To collaborate to ensure National EM Programs are compatible and harmonized where necessary.
    - To document the roles and responsibilities of fisheries government authorities and vessel owner/crew with respect to inter alia installing and maintaining equipment, routine cleaning of cameras, sending storage devices, access to EM records and EM data, responses to mechanical or technical failure of EMS.
    - The CPC shall provide the IOTC Secretariat with the contact details of their EM Program Coordinator(s).
- *IOTC Secretariat:*
    - To approve National EM Programs.

- To collaborate with the Commission and CPCs to ensure that National EM Programs are consistent and compatible with the REMP and meet IOTC's REMP monitoring minimum standards.
- To summarize and provide annual reports about the progress of the REMP, including National EM Programs, to the Commission and its Subsidiary Bodies.
- To recommend improvements and adjustments to the REMP to ensure that data and monitoring requirements of IOTC Commission are met.
- To coordinate activities regarding EM with other tuna RFMOs as required by the Commission.

EM Vessel Monitoring Plan

- The vessel's EM equipment characteristics and how the vessel's EM equipment is optimized to meet the EM System and Data Standards must be recorded on a Vessel Monitor Plan (VMP) for each vessel.
- The VMP shall be developed in collaboration with the EM service provider, vessel owner and fishing authorities.
- The Vessel Monitoring Plan will describe the numbers of cameras, position and settings, and key areas to be monitored for fishing activities, catch handling, species identification, fate and storage of the individuals.
- The VMP should include information on:
  - Contact information: contact information for the vessel owner, vessel operator and EM service provider as long as the contract lasts.
  - General vessel information: basic information about the vessel and its fishing activities and operations (e.g., vessel name, registration number, target fishery, areas, fishing gear, LOA…).
  - Vessel layout: equipment of the vessel with detailed information, plan of the vessel disposition and different areas (decks, processing area, storage, etc.).
  - EM equipment setup: description of the settings of the EM equipment, such as time running, number of cameras and areas covered, time recording for each of the cameras, number and position of sensors (if any), software used, control box disposition, procedures for checking the proper functioning of the EM equipment installed onboard, etc.
  - A snapshot of each camera should be inserted in the VMP.
- The VMP should be signed off by the vessel owner and finally approved by the flag state competent authority.
- Any physical changes on a vessel that will affect EMS should be reported to the flag state competent authorities. The VMP should be updated and approved again by the competent authority as soon as possible.
- Any change on the EM equipment (e.g., installation of a new generation of cameras) should be reported to the flag state competent authorities. The VMP should be updated and approved again by the competent authority as soon as possible.

Operationalising IOTC's REMP – Accreditation and Auditing of National EMPs

- CPCs should apply to the IOTC Secretariat to have its own National EM Program recognized as part of IOTC's REMP so as to comply with ROS data minimum standards.
- IOTC shall audit the National EM Programs against the EM minimum standards.
- National EM Programs shall be reviewed and subject to regular and periodic audits as agreed by IOTC Commission.
- IOTC could authorize National EM Programs approved by other tRFMOs.