

Developing an electronic monitoring program for the Indian Ocean Tuna Commission

Prepared by: Australia

Purpose of this paper

This paper provides an overview of electronic monitoring technology, a snapshot of some existing programs, an outline of the benefits such a program could offer the Indian Ocean Tuna Commission (IOTC) and options for developing an electronic monitoring program for the IOTC.

What is electronic monitoring?

Electronic monitoring is rapidly developing technology. Many countries are trialling, implementing or fully utilising electronic monitoring programs to collect and verify information to independently monitor and review fishing operations. An electronic monitoring program collects information about fishing activities of fishing vessels and consists of on-board electronic monitoring hardware as well as onshore systems for data collection and analysis. This may be supplemented by additional data collection such as port sampling. Uses of electronic monitoring systems include improving compliance monitoring, improving logbooks, supplementing observer data, monitoring transshipments and recording catch data.

The configurations of on board electronic monitoring systems can vary with gear and individual boat layout. Typically systems comprise sensors and video cameras capable of monitoring and recording fishing activities on fishing vessels. Some data may be transmitted onshore in close to real time (via satellite) while the bulk of the data (such as recorded video) are generally obtained after the vessel reaches port. The electronic monitoring data are then subject to analysis on-shore to allow reporting, review and independent verification of data reported in logbooks and to collect additional data.

Objectives and benefits of electronic monitoring

Electronic monitoring can be a cost effective data collection and verification tool that improves the accuracy and reliability of logbook data. A primary purpose of well-designed electronic monitoring systems is to improve the quality of fishery dependent data, such as that recorded in logbooks, and to determine a vessel's compliance with reporting requirements. Quality of fishery dependent data is a critical factor to consider when determining overall fishery data needs and how data may be efficiently collected (logs books, observers, port sampling etc).

Depending on gear and system configurations, electronic monitoring can monitor up to 100 per cent of fishing activity and be used to audit logbook records of discards, bycatch and interactions with protected species. Over time, electronic monitoring is expected to improve the accuracy of logbook data and improve compliance with conservation management measures. Higher quality data will contribute to more reliable stock assessments and provide clearer information on protected species interactions in the fishery.

Electronic monitoring systems can fulfil some functions of a human observer and in certain circumstances may be able to replace a human observer completely. Electronic monitoring systems can provide an alternative to human observers on vessels which may not be conducive to hosting observers or where observers are not available.

Electronic monitoring program case studies

Australia

Electronic monitoring is mandatory in three domestic Australian tuna fisheries and is set to expand to additional fisheries in coming years. The electronic monitoring systems monitor close to 100 per cent of

fishing activity and can be complemented by human observers collecting biological data if this cannot be sampled in port. Australian electronic monitoring systems typically include several key components as shown in Figure 1. These are: three or more video cameras; a hydraulic gear sensor; a drum sensor; a global positioning system receiver; satellite communications and a control centre. The electronic monitoring equipment is activated during fishing operations, specifically when the hydraulics are running during the set and haul. The cameras remain activated for a period of time after the haul to record the processing of catch. All video and sensor data are recorded to an encrypted and tamper-evident on-board hard drive.

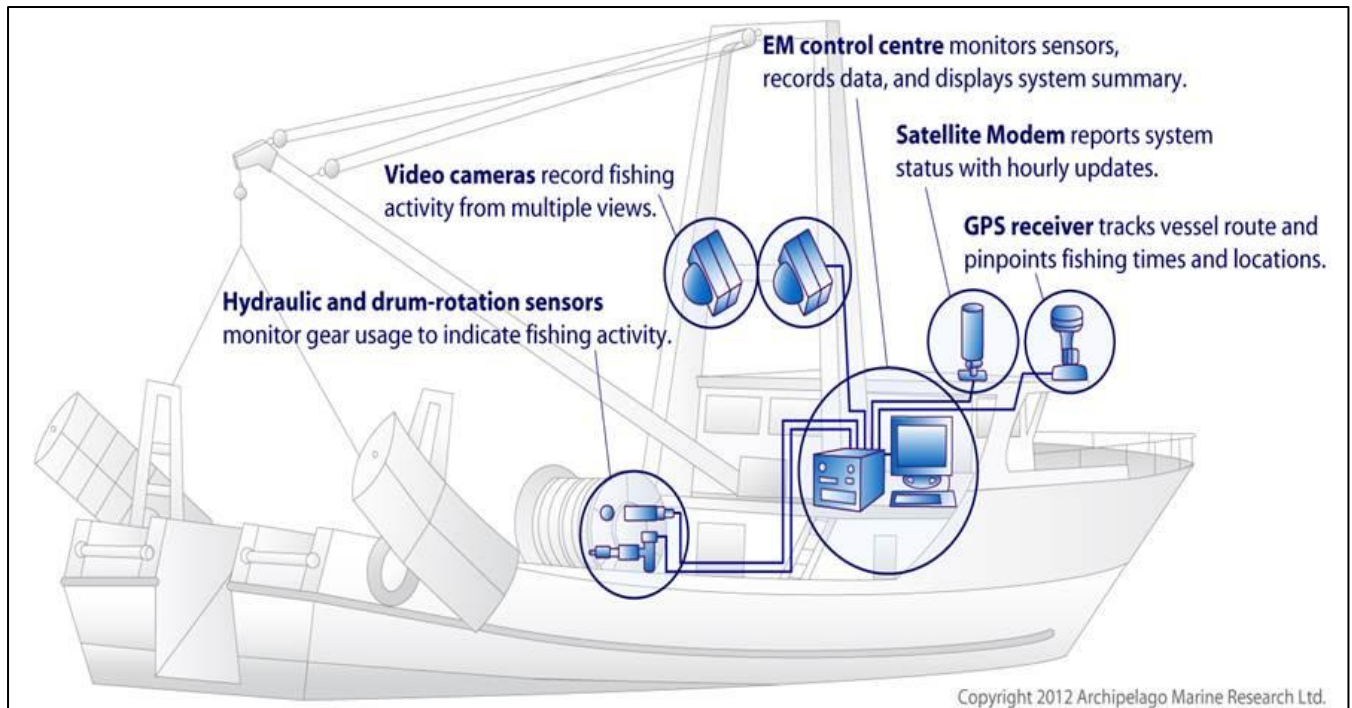


Figure 1: Example of an electronic monitoring system vessel setup.

Video footage is analysed and used as an audit tool to verify vessel logbooks. After the data have been analysed, operators receive individual reports on the accuracy of their logbooks to encourage improved reporting. After an initial adjustment period where vessels have the opportunity to improve data reporting quality, Australian electronic monitoring will be used as a tool for compliance and enforcement action.

Sensor data are transmitted to the regulatory authority in real time and include information on whether the system is fully operational, the location of the fishing vessel and whether fishing gear has been set or hauled. Hard drives with a complete set of video and other data are submitted to the regulatory authority for analysis of all or part of the data and footage; regulatory authorities may outsource analysis to independent bodies. An integral part of a complete system is the 'onshore' processing and analysis of the electronic monitoring data alongside other data (such as logbooks). Video footage provides independent verification of catch, discards and interactions with protected species and can be used as evidence if appropriate legislation has been implemented.

Southern Indian Ocean Fisheries Agreement

The Southern Indian Ocean Fisheries Agreement (SIOFA) is in the early stages of considering how electronic monitoring systems could be used on board vessels fishing in the SIOFA Area.

Western and Central Pacific Fisheries Commission

The Western and Central Pacific Fisheries Commission (WCPFC) has established an electronic monitoring and electronic reporting working group to discuss the potential for electronic monitoring and reporting in its area of competence. The working group is currently focusing on developing electronic reporting data standards. A number of WCPFC members and subregional agencies are trialling electronic monitoring technologies and the need to develop standards in this area is recognised.

Australia presented a paper electronic monitoring catch reporting in the Australian Pacific longline fishery, a copy of the paper is available at <https://www.wcpfc.int/node/27541>.

Implementing electronic monitoring in the IOTC

As electronic monitoring becomes a globally established data collection and verification tool, there is an opportunity to review how data are collected in the IOTC area of competence. This includes consideration of how electronic monitoring and on-board observers can be used, either separately or together to ensure that data requirements are met in a cost effective way.

An IOTC electronic monitoring program could be an opt-in alternative or supplement to on-board observers; it does not need to be compulsory. When using electronic monitoring systems, CPCs would have the primary responsibility to approve, install and maintain the proper operation of electronic monitoring systems in accordance with relevant IOTC resolutions and data requirements. The IOTC could develop a scheme to ensure the electronic monitoring system being used by a CPC would provide the data required to meet IOTC obligations.

The IOTC could develop a new resolution on electronic monitoring systems, or could consider updating relevant existing resolutions to allow electronic monitoring as a complementary data collection tool or an alternative to observers. This would include updating *Resolution 11/04 On a Regional Observer Scheme* and the *IOTC Regional Observer Programme Manual*. Under an electronic monitoring system, biological sampling and some vessel and gear details may still need to be provided using alternative data collection programs such as port sampling, compliance programs, logbooks or observers where appropriate. An IOTC electronic monitoring program could strengthen monitoring and compliance in the IOTC area of competence.

Next steps in developing an electronic monitoring for the IOTC

Following discussions at IOTC20, Australia submits this paper to the 19th Session of the Scientific Committee (SC19) for information and, if appropriate, advice. Australia expects the Scientific Committee will have an important role in the implementation of electronic monitoring in the IOTC, in particular, considering data standards and specifications for electronic monitoring that meets IOTC requirements and will ensure scientific data continues to be collected and reported to the required standard.

Australia intends to present an electronic monitoring proposal to IOTC21 in 2017, taking into account any advice provided by the Scientific Committee. The proposal would include, for example, revisions to *Resolution 11/04 On a Regional Observer Scheme* and the *IOTC Regional Observer Programme Manual*. It would also take into account the pilot electronic monitoring program planned by the Secretariat for 2016/17. The proposal could include technical specifications for electronic monitoring systems (output standards ensuring the system used is sufficient for its purpose); data specifications to provide guidance on format; roles and responsibilities, including those of the Secretariat, CPC's, flag States and coastal states; and reporting requirements such as who reports and how often. Australia welcomes the feedback and input of CPCs.