Agreement on the Conservation of Albatrosses and Petrels

Electronic Monitoring of Seabird Bycatch

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SUMMARY

Detailed information on seabird-fisheries interactions is necessary to allow an analysis of the effects of fisheries on seabirds and to evaluate the effectiveness of bycatch mitigation measures being used. At the second meeting of the Western and Central Pacific Fisheries Commission Scientific Committee (WCPFC-SC2), it was noted that to adequately characterize rare events, such as seabird bycatch, up to 100% observer coverage may be required statistically (WCPFC-SC2 Report, para 32). However, at present most tuna Regional Fisheries Management Organisations (tRFMOs) only require 5% observer coverage for longline fishing operations, with the exception of the CCSBT, which requires 10% observer coverage.

The installation of electronic monitoring (e-monitoring) equipment on fishing vessels has the capacity to provide the additional information necessary to evaluate seabird bycatch events. Electronic monitoring is the use of fixed cameras on fishing vessels to record data on fishing activity. The cameras are linked to sensors that monitor the activity of fishing equipment, which allows the cameras to be turned on and off in association with key events, such as setting and hauling. When suitably sited on a fishing vessel, the cameras can capture the data necessary to determine the efficacy of the three seabird bycatch mitigation measures primarily used in the tuna RFMOs, namely night-setting, weighted branch-lines and tori lines.

RECOMMENDATIONS

It is recommended that the CCSBT ERSWG:

1. actively promote the use of e-monitoring in its pelagic longline fisheries where there is a known overlap of seabird distribution with fishing effort;
2. undertake a study to identify the most effective deployment of cameras for capturing seabird bycatch events; and
3. develop protocols for the analysis of e-monitoring data relating to seabird bycatch.

1. BACKGROUND

It is noted in CCSBT-ERS/1308/17 that all tuna RFMO seabird bycatch conservation measures have provisions for review of the effectiveness of these measures. In ICCAT and IOTC there are specific commitments to reviews in 2015 and 2016, whereas in the others there are commitments to regular review, but with unspecified time frames.

At WCPFC-SC2, it was noted that to adequately characterize rare events (such as seabird bycatch), up to 100% observer coverage may be required statistically (WCPFC-SC2 Report, para 32). However, at present the WCPFC ROP only requires 5% observer coverage for longline fishing operations, which is unlikely to provide the data required to conduct the analysis that has been tasked to the IWG-ROP by CMM 2012-07.

The implementation of an electronic monitoring programme is recommended as a mechanism for providing this data. An electronic monitoring system consists of a number of cameras that are fixed to a fishing vessel in appropriate places to review fishing operations. The data collected from these cameras is stored on a hard disk on the fishing vessel for later analysis. The cameras are linked to sensors that monitor the activity of fishing equipment, which allows the cameras to be turned on and off in association with key events, such as setting and hauling (Fig. 1). As these cameras can operate for the full duration of fishing events, the cameras have the potential, when appropriately installed, to capture the data necessary to determine the efficacy of the three seabird bycatch mitigation measures primarily used in the tuna RFMOs, namely night-setting, weighted branch-lines and tori lines.

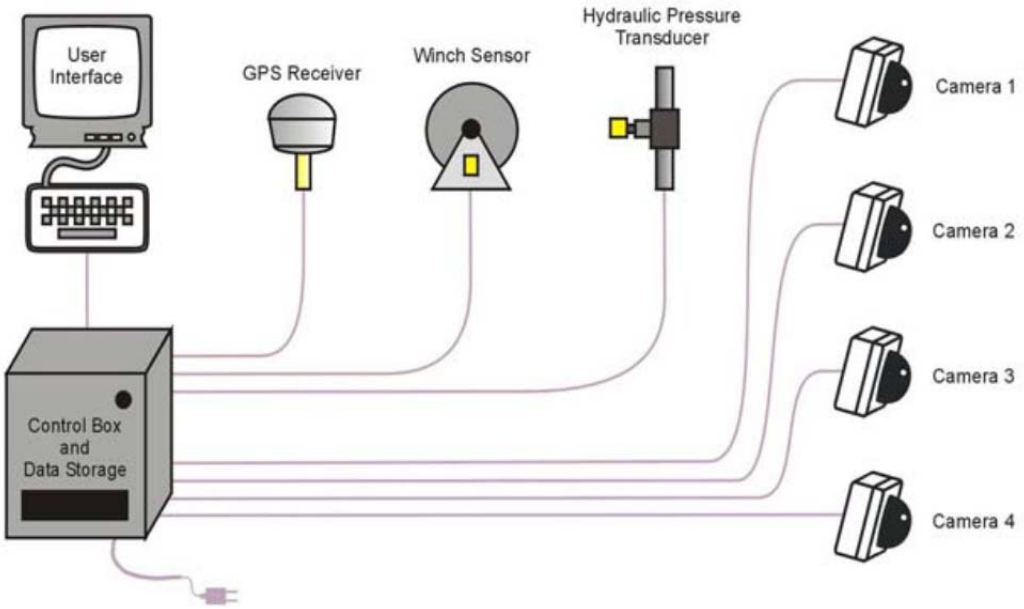

Fig.1 From 'E-monitoring', Australian Fisheries Management Authority, 30 September 2011.

E-monitoring systems complement other data collection systems, such as onboard observers and log books. They have been trialled in a number of countries, including Australia, Canada, Sweden and the USA and now form a well-established component of some national observer programmes (Tilander and Lunneryd 2009; Piasente *et al.* 2012; Australian Fisheries Management Authority 2013).

2. KEY ISSUES

There are a number of considerations that need to be taken into account when considering the introduction of e-monitoring systems. A brief discussion of these issues follows.

2.1. Identification of Bycatch Events

The use of e-monitoring to monitor bycatch hauled onboard the fishing vessel has the potential to be very effective in identifying bycatch events, as it is operating 100% of the time lines are being set/hauled. However, the usefulness of the data depends on how much of the digital imagery is analysed. Some management systems only require 10% of the footage to be audited.

It is unlikely that an image from an e-monitoring system will be adequate to identify the species of the seabird. Further development of recognition software may be able to increase the level of species identification in the future.

2.2. Monitoring Effectiveness of Mitigation Being Used

The use of e-monitoring systems can be of great benefit in analysing the effectiveness of the bycatch mitigation measures being used. This is particularly the case for the three mitigation measure specified for use in CMM 2012-07 i.e. tori lines, night-setting and weighting of branch-lines. Cameras will, however, need to be located in appropriate positions to view the mitigation measures when they are in use.

2.3. Identification of Seabird Assemblages

The use of e-monitoring has the potential to add value by collecting large volumes of data in a format that is useful for scientific analysis. This technology could be particularly useful for collecting data on seabird assemblages surrounding fishing vessels. Although this data is sought by some scientific observer programmes, the data collected by observers has the potential for significant bias, depending on the sampling protocol adopted. Data collected through an e-monitoring system can be systematically collected in accordance with agreed criteria and the scientist analysing the data can then define the sampling protocol to be applied.

2.4. Potential Synergies

The use of e-monitoring also has potential benefits for other types of bycatch, such as sharks and turtles, the effective management of which is also affected by a lack of data.

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