Enhanced monitoring in the Eastern Tuna and Billfish Fishery

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ABSTRACT

1. This paper summarises work relating to the implementation and ongoing management of e-monitoring on vessels within Australia's Eastern Tuna and Billfish Fishery.

2. E-monitoring is a targeted approach to collecting information on fishing activity, which integrates video, sensors and programmable loggers into a powerful data collection tool. E-monitoring data is cost-effective, independent and auditable allowing Australia to validate and improve other data such as fisher's logbooks.

E-monitoring

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Background

The Australian Fisheries Management Authority (AFMA) has trialled e-monitoring in several fisheries over the past decade and is now extending its current capabilities more broadly in a number of fisheries, including the Eastern Tuna and Billfish Fishery (ETBF) during 2014-15. In recent years the ETBF has taken approximately 7% of Australia's Southern Bluefin Tuna catch by longline methods.

Archipelago Marine Research (AMR) has been contracted to assist in the design and implementation of an e-monitoring program for the Gillnet Hook and Trap, Eastern Tuna and Billfish Fishery and Western Tuna and Billfish Fishery. AMR is a Canadian-based e-monitoring manufacturer and service provider, with a regional subsidiary Archipelago Asia Pacific (AAP) located in Canberra. AAP has been selected through an open market approach to provide e-monitoring equipment and services in Commonwealth fisheries. This includes the installation and ongoing maintenance of e-monitoring equipment on vessels, as well as, training, consultation and data-review services. AAP have demonstrated experience providing e-monitoring equipment and services in a range of fisheries around the world and their hardware and software has been demonstrated effective in AFMA trials in Commonwealth fisheries.

AFMA has carried out port visits throughout the ETBF to keep fishers informed and educated about e-monitoring and their requirements for maintaining an e-monitoring system. Installations commenced in February 2014.

The majority (approximately 93%) of Australia's Southern Bluefin Tuna catch is taken by the purse seine method. There are currently no plans to extend the e-monitoring program to that sector because fish are not brought out of the water during the purse seine operation

and therefore cannot be viewed by on-board cameras. Underwater camera technology is already utilised in farm transfers.

E-monitoring System

E-monitoring uses sensors to detect and record fishing activity. Although specific configuration varies with gear and individual vessel layouts, an electronic monitoring system typically includes several key components: three or more high definition video cameras, a hydraulic gear sensor, a drum sensor, a GPS receiver, and a control centre. The data collection software monitors the EM system, and stores relevant fishing activity data on a removable hard drive for later review. Various aspects of the design of the system and its operation are illustrated in Figure 1.

Figure 1. A typical e-monitoring system which includes cameras, sensors and a computer modem to detect and record fishing activity.(Photo: Archipelago Marine Research Ltd)

Data analysis

As installations are completed, data analysis will commence. In order to determine the fishing activity for any given trip, the sensor data (locations, gear activity) on all trips will be processed in order to determine:

- Presence of any time gaps (temporal breaks in the data set, indicating periods when the EM system was not operating).

- Time and location of all fishing events.
- Fishing operations occurred in permitted areas.

10% of imagery will be randomly sampled to determine:

- Compliance with seabird mitigation measures.
- Enumeration of catch items by species and dispositions (i.e., retained or discarded).

Potential Benefits

E-monitoring has the potential to:

- Allow AFMA to detect and decrement from quota any discarding of dead SBT.
- Provide the ability for AFMA to audit individual operators. This would enable individuals to be held responsible for their actions rather than the whole fleet. This ensures that fisheries do not have to be closed (for example in the case of a breach of Australian Environmental Legislation) due to the actions of a single operator.
- Provide increased certainty, consistency and confidence in fisheries monitoring data through the ability to cross check catch disposal records, fisher's and observer's logbook records with new e-monitoring data. This improves the quality of scientific assessment and decision-making.
- Reduce the need for on-board fisheries observers to monitor compliance with Threatened, Endangered or Protected species mitigation requirements.

Further information

The following link provides more detail relating to e-monitoring and the Eastern Tuna and Billfish Fishery.

Electronic onboard monitoring pilot project for the Eastern Tuna and Billfish Fishery | WCPFC

The Western & Central Pacific Fisheries Commission (WCPFC) has also investigated potential options relating to e-monitoring. The preliminary consultant's report relating to that project can be found at the following link.

E-Monitoring and E-reporting preliminary consultancy report | WCPFC