



Australian Government
Department of Agriculture,
Fisheries and Forestry

Assessing the outcomes on the trial of stereo video



Australia

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Background

Commitment to CCSBT

In October 2020 Australia advised CCSBT 27 that it would trial the cost effectiveness and accuracy of fully automated stereo video systems in situ in Australia's tuna farms. Australia advised it would test the market to see what systems were available and the likelihood that they will meet its preconditions for implementation of being fully automated and cost effective.

At CCSBT 29, October 2022, Australia provided a working paper detailing its trial of stereo video technology and, if successful, the steps to implement stereo video as a monitoring tool in its farm sector.

Australia advised that, if the stereo video trial proved successful, Australia would be required to work through a number of additional steps to operationalise stereo video as a monitoring tool for its farm sector.

The trial

During 2021, Australia undertook an open tender process to procure a service provider of stereo video technology for the trial. The tender was open to both international and domestic service providers. Prior to the tender, Australia undertook market research on stereo video technology, which included contacting all known suppliers with potential to offer fully automated stereo video technology. The potential suppliers identified were informed by discussions with CCSBT Members, including Japan, New Zealand and the European Union, as Australia sought advice on potential fit-for-purpose stereo video technologies, or stereo video technology providers in their respective countries.

The successful tenderer Australia engaged was Universitat Politècnica de Valencia (UPV). UPV has experience in using stereo video in the Mediterranean including in the International Commission for the Conservation of Atlantic Tunas (ICCAT).

The trial was undertaken in Port Lincoln, South Australia, in two phases:

- Accuracy and length trials: Phase 1 tested the accuracy of stereo video monitoring on SBT. This phase took place in February and March of 2023.
- Transfer trials: The second and final phase, which tested stereo video technology in a commercial operational environment, took place over 8-27 February 2024.

Progress reports were provided to CCSBT throughout the trial with the final report being provided in November 2024 (CCSBT Circular #2024/44).

Assessing stereo video as a tool to decrement quota against Australia's legislative framework

Australia has in place procedures to decrement catches against quota holdings. These procedures have been strengthened over time and are specified in legislative instruments. The current method of decrementing catches against quota is consistent with Australia's domestic legislative objectives. Any

alternative method must be assessed against – and meet – these objectives. Of relevance is the objective for Australia to pursue efficient and cost-effective management.

Australia has consistently noted that, while it remains confident in its sampling methodology, implementation of stereo video is subject to criteria that the technology is: 1) fully automated; and 2) cost-effective.

As detailed in the reports by Australia to CCSBT, the trial was successful in demonstrating that stereo video equipment can be physically deployed in Australian conditions, integrating well with normal farm operations¹

The trial found that reasonably accurate lengths can be estimated, but only after iterative improvements were made after the transfer. Notably, this work had to take place off-site. This work was not insignificant and involved, among other things, revision of the tracking algorithm by expert computer scientists².

The trial did not fully resolve other issues such as errors in counting fish, including where the same fish was counted more than once; instances where the head was conflated with the tail; and, where incorrect objects were counted. The scale and impact of such errors was examined through what the authors described as a laborious and time-consuming review and annotation process³. The errors introduced a requirement for post transfer analysis and manual input which would impose additional regulatory and cost burden on government and/or industry.

Following completion of the trial, UPV has advised the software is not commercially available but that the European Commission has requested, through ICCAT, UPV to move towards that goal (CCSBT Circular #2024/44). UPV, in its final report, acknowledged the uncertainties regarding software availability and cost, in addition to uncertainty around additional time required to review footage and detect incorrect measurements. As such, the trial has not demonstrated that a modified SV system, that addresses the key operational issues above, meets the cost-effective criteria.

Lastly, it is important to note that, even after the post-transfer correction processes required to address the problems encountered with length estimates, the trial results did not indicate significant uncertainty with Australia's existing monitoring program. This supports Australia's view that the current regime is fit-for-purpose, robust and accurate. The performance of the stock against the rebuilding targets in the Management Procedure, including reaching the interim rebuilding target 0.2 TRO in the 2023 stock assessment, does not support any assumption of large-scale errors in the estimation of removals of juvenile fish to the Australian farm sector.

Success of the trial was outlined in the *Stereo video implementation Trial and implementation steps in Australia's farm sector* agreed to in October 2022 at CCSBT29 as a requirement before implementation of SV by Australia. Undertaking the trial represented a significant investment by the Australian Government of approximately AUD\$695,000 in trial costs and project support only. In assessing the outcomes of the trial against the starting criteria of fully automated and cost-effective, Australia has concluded that it has not provided a basis to justify investment of further funds.

¹ See Section 2 Phase 2 of the Final Report [here](#)

² See sections 4.2.2 *Revision of the tracking algorithm parameters* and 4.2.3 *Results with on-site calibration and updated tracking algorithm* of the Final Report

³ See section 4.2.4 *Influence of incorrect and duplicate measurements* of Final Report

Next steps

Australia notes similar trials, co-funded by the European Union, have been undertaken by ICCAT ([Resolution 22-15 by ICCAT establishing a pilot project to test the use of stereoscopic cameras during first transfer and the automation of video footage analysis](#)) in the Mediterranean and Adriatic. It remains uncertain whether the work being undertaken by ICCAT will result in the development of a commercially available product, but Australia will monitor progress.

In 2023, the Australian Government released its Data and Digital Strategy⁴, providing a pathway for technology uptake and modernisation to improve regulation, increase accuracy of decision-making information and support industry productivity. In fisheries, Australia remains committed to continual improvement of our practices and is embracing opportunities to digitise monitoring programs to enhance accuracy and efficiency, including through the uptake of artificial intelligence and machine learning. Australia has a well-established Electronic Monitoring Program in our longline fishery and is in the process of expanding that into our two largest domestic trawl fleets. Australia will continue to work on technological solutions that increase fisheries management effectiveness, support industry efficiency, and reduce cost burden, working within available resources and in line with all of Australia's fisheries information priorities.

⁴ [Strategy | Data and Digital](#)