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The Photo Tow: a New Technique for Estimating Coral Reef Status on Large Spatial Scales

Yannick Chancerelle ¹⁾ and René Galzin ²⁾

¹CRIOBE, UMS 2978 CNRS-EPHE, BP 1013, 98 729, Papetoai, Moorea, Polynésie française, criobe@mail.pf

²FRE 2935 CNRS-EPHE, Ecosystèmes Coralliens, Université de Perpignan, 66860 Perpignan Cedex, France

The concept of *Photo Tow* technique to estimate coral reef status on a large spatial scale has been developed at Moorea island (French Polynesia) outer reef slopes. This technique has permitted to collect data, faster and more accurately than ever before with classic visual methods. It is based on the principle of manta tow survey but combines a manta board towed by a boat, with a camera and flashes to replace the data sheets. At regular chosen time intervals (30 sec. to 2 mn) and at a constant depth, an operational towed diver takes pictures of the reef on the chosen trajectory to be sampled. Further devices, such as cross-beamed lasers and depth and time logger, enable the diver to measure the precise depth and time intervals at which the photos are made. Moreover, the boat is equipped with GPS and log and sounder allow the diver to be towed at a constant speed and depth. At each time interval, the boat speed is reduced to allow the towed diver to take the picture. Once taken, the pictures are analysed at the laboratory to record live coral cover percentage.

On Moorea outer reef slopes, the *Photo tow* showed coral status differences with increasing coral coverage from southern to northern exposed coasts. Data were added in a GIS program to produce a map with large spatial scale representation of reef status around the island. Moreover, the *Photo tow* technique could be adapted for other studies concerning the large scale assessment of coral reef stresses (*e.g.*: bleaching, COT infestation) or counting of distinct benthic organisms. Therefore, it requires good visibility for photography and a sufficient depth profile for a small boat crossing.