

International workshop on “Different survey methods for coral reef fish, including methods based on underwater video”

Honiara Campus, University of the South Pacific, Solomon Islands (10 to 13 September 2013)

Responsible: David Lecchini

Institute for Pacific Coral Reefs, CRIOBE, Moorea, French Polynesia

In September 2013, staff from the University of the South Pacific (USP) Honiara campus, the Secretariat of the Pacific Community (SPC) and IFREMER in New Caledonia, and the French Institute for Pacific Coral Reefs (IRCP) in Moorea, French Polynesia, co-facilitated a workshop entitled “Different survey methods of coral reef fish, including the methods based on underwater video”. The workshop was funded by the French Embassy (Pacific Fund), and had two key objectives: to allow the eight USP students involved to learn the different techniques of fish monitoring; and to increase capacity at the level of USP, government and NGO staff (20 persons) already involved in fish monitoring, particularly with regard to recent underwater video techniques and data analysis tools. To achieve these objectives, the workshop was split into two parts.

1. Seminars

Seminars were held at USP campus on day one. These seminars provided participants with background information on coral reef fish ecology and some of the various in-water methods currently used to survey fish populations in the Pacific region. Each of the different monitoring networks in the Pacific — IRCP, IFREMER, IUCN, SPC and WorldFish — was explained to the participants.

2. Field-training programme

A field-training programme was run at Naro village during days 2 and 3, and the data collected in the field was analysed on day 4 at USP campus. The objective of the two field trip days was to allow survey participants to try four different survey methods for surveying coral reef fish.

The first method was based on the technique implemented by the Global Coral Reef Monitoring Network (GCRMN), which is currently used by local participants in Solomon Islands. In this method, certain species of ecological and economic importance are counted along a single pass of a 25 m long x 5 m wide fixed belt transect. The second method consisted of a variation of the “traditional” GCRMN method that used the same fixed width belt transect

size, but where surveys were based on three passes along the transect. This method is largely used by IRCP, and its goal is to simplify the process by counting only specific groups along each pass. For the Naro trip, surveyors counted mobile fish (e.g. snappers, parrotfish) on the first pass, more “resident” species (including groupers, damselfish and surgeonfish) on the second pass, and cryptic species (e.g. soldierfish, scorpionfish, hawkfish, gobies and blennies) on the third pass. The third method was distance-sampling underwater visual census (D-UVC), the method currently used by SPC. In this method, surveyors count individuals of the species of interest along a transect line, and estimate their length and perpendicular distance from the transect line, with no set limit to the distance at which fish are recorded. The fourth method examined was based on the use of videography, using a fixed position rotating system developed by IFREMER. This system consists of two waterproof housings related by an axis. The lower housing contains an electric engine powered by 2.4V rechargeable batteries, which sets in motion the axis related to the upper housing enclosing a high definition (HD) camera. The camera was a Sony HDR-SR11 with an integrated 30 Gigabyte hard drive enabling the recording of up to 4 hours of HD video. The system was set on the sea floor at Naro reef (at three sites) and rotated at predefined time intervals from a fixed angle (60° at each rotation and every 30 seconds).



David Lecchini (IRC-CRIOBE, Moorea), Robson Lasimae and Lawrence (USP students) in front of Naro village.

Table 1. Comparison of the value of different qualitative criteria across the four monitoring methods.

Evaluation criteria	GCRMN method	IRCP method	SPC method	Video method (IFREMER)
Taxonomic level fish are identified to	+	++	++	++
Level of skill and training required	+	++	++	+
Time in the field	+	++	++	-
Time in laboratory	-	-	-	++
Staff required	2 divers	2 divers	2 divers	1 fish expert + 1 technician to check the equipment*
Costs	-	-	-	++

- : Low; + : Moderate; ++ : High

* 2 divers are needed for the equipment installation under water.

On the fourth day of the workshop, the data collected in the field at Naro were analysed at the USP campus in Honiara by all participants, who compared the difference in indications of fish abundance generated by the four techniques (GCRMN, IFREMER, SPC and IRCP methods). Each participant was given the opportunity to express an opinion about the advantages and disadvantages of each technique (Table 1).

For more information:

David Lecchini

IRCP-CRIOBE (website: www.ircp.pf)

lecchini@univ-perp.fr



The underwater video system developed by IFREMER.



Smiling participants during the two field days at Naro village.