

Proposal for a small-scale tagging project in the Republic of Maldives

Background

The Republic of Maldives has a long history of fishing on tunas that goes back several centuries ago. Tuna fishing represents one of the main economic activities of the country, with almost 10% of the population involved directly in the fishery, and provides the backbone of a rich cultural heritage. Therefore, it is not surprising that Maldives has been aware that the preservation of fishing as a way of life depends on the sound management of the fish stocks and that this requires knowledge about the status of the fish resources.

Mindful that tagging provides a very valuable scientific tool, Maldives has conducted two tagging projects executed during the seasons of 1990-91 and 1992-93. To date, this represents the most successful tagging conducted in the region with a total of 17,000 fish tagged, 15% of which were recovered. The information obtained provided the basis for several analyses of the condition of the resources that were documented in numerous reports published in the international literature.

One of the areas that did not receive full attention in the previous experiments was the question of interaction with industrial fisheries operating in the Indian Ocean. This could be best achieved through simultaneous tagging in both the areas of industrial fishing and the traditional Maldivian fishing grounds. In previous experiments the effort gone into recovering tags from the industrial fisheries was probably not sufficient to obtain a large number of tags returned from that source.

The Indian Ocean Tuna Tagging programme (IOTTP) offers a unique opportunity to conduct such simultaneous experiments that should shed more light on the relation between the resources in Maldives and the rest of the Indian Ocean. The current document proposes to complement the activities of the IOTTP with a component of tagging in Maldives at a fraction of the cost of the main phase of the programme.

The assessment of interactions is not the only objective covered by this proposal. Tagging from Maldives will contribute to several of the objectives of the IOTTP, such as an improved estimation of growth rates for tunas, local exploitation rates, and, obviously, an improved knowledge about the exchange rates between the different areas of the Indian Ocean.

Summary description of the project

The proposed project is based on the experiences from previous two experiments. The **tagging platform** remains the traditional dhoni vessels. This fleet has undergone a remarkable transformation towards larger, more efficient vessels, virtually all of them now in the 75-90 ft size range. They are all fitted with GPS, many of them with echosounding equipment and some with bird radars. Releases and the eventual recoveries can be better located thanks to the positioning equipment. More deck space provides for safer operations. All these developments mean that the vessels will provide an even more efficient platform that in previous experiments.

Fishing techniques have changed to some extent as the boats now catch bait in the early morning hours with the help of lights, allowing them to be back to the base port before noontime.

As it was done before, rather than chartering the vessel, the tagging team will be on board during a regular fishing trip and fishermen will be paid a price per tagged fish that exceeds the regular market price to provide a financial incentive. A price differential will be paid for yellowfin tuna as to provide an additional incentive and to reflect different market prices for that species.

The **tagging rate** is expected to be about 100 fish tagged per day, which is a conservative estimate, considering past experience. In this calculation, the number of days including the days used for travel to and from the tagging sites.

The proposal anticipates that **two tagging teams** of three taggers each will be deployed in the field. This, together with the anticipated tagging rate of 100 fish/day, results in the total estimate of 210 man/days field work, equivalent to a total of 35 days of field work to complete the release experiment.

The **tagging period** anticipated covers the main fishing seasons, especially during the northeast monsoon between November 2003 and April 2004. This could be complemented by some tagging during the southwest monsoon between June-August 2004, if the targets have not been met in the northeast monsoon season. The intended **area of tagging** is the area west of the northern atolls. The choice of the season and areas is consistent with the main objective being the estimation of exchange rates with the western Indian Ocean.

Special emphasis was placed on provide attractive **rewards** for tags returned. In particular, the proposal contemplates the release of a number of double-tagged fish to complete to estimate tag-shedding rates. This is of particular importance as most of the personnel in the tagging teams will have little or no previous experience in tagging. A premium reward is to be paid when the whole fish is returned. This is to minimize to the extent possible length-at-recovery measurement errors, which complicate the estimation of growth rates from tagging data.

The Marine Research Center, under the Ministry of Fisheries, Agriculture and Marine Resources, will be the **institution responsible** for the execution of the project. A small component for **training** of new personnel has been added to the budget. Training requested covers not only field techniques but also facilities to produce fast reports to the fishermen returning tags on the history of the tag returned.

On the **publicity campaign** side, the MRC will be in charge of translating, printing and distributing the posters offering rewards for returned fish. The MRC produces a popular programme for TV Maldives, which would be an excellent vehicle to communicate the objectives as well as the progress of the programme, therefore ensuring a high return rate from a motivated community. It would provide an opportunity for emphasizing the importance of returning tags with full information including an accurate measurement of the fish.

This project would complement the information obtained from the tagging proposed from the Lakshadweep Islands and could also be supplemented by a pilot proposal to conduct tagging of large yellowfin tuna from the handline fishery near Male.

Proposed budget for the project

A. Payment for fish tagged

	Number of fish	Price/fish	
Skipjack < 60 cm FL	3,000	\$ 5	\$ 15,000
Yellowfin tuna < 80 cm FL	500	\$ 8	\$ 4,000
Yellowfin Tuna > 100 cm FL	-	\$ 12	\$ -
Total fish tagged	3,500		Total release cost: \$ 19,000
of which	1,000	are double-tagged	

B. Tag rewards

20 % Recovery rate assumed	% of recov	Number recovered	Reward	
Tag with no recovery information	5	25	\$ 10	\$ 250
Tag with full information	50	250	\$ 15	\$ 3,750
Whole tagged fish returned	45	225	\$ 20	\$ 4,500
Double-tagged with no info	5	10	\$ 15	\$ 150
Double-tagged with full info	50	100	\$ 20	\$ 2,000
Whole double-tagged fish returned	45	90	\$ 25	\$ 2,250
Lottery				\$ 1,500
Total fish recovered:		610	Total rewards cost:	\$ 14,400

C. Equipment

	Number of tags	Unit price	
Yellow PDT dart tags for normal size fish	5,000	\$0.39	\$ 1,929
Applicators for PDT dart tags	100	\$3.80	\$ 380
		Total equipment cost:	\$ 2,309

D. Other expenses

Hiring of Dhoni for transportation to tagging sites			\$ 5,000
Field allowances for MRC staff	\$ 15	per day for 210 man/days	\$ 3,150
Other equipment			\$ 2,000
Publicity campaign			\$ 2,000
Traning of MRS staff			\$ 1,000
		Total other expenses	\$ 13,150

E. Contingencies

10 % of A, B, C and D

\$ 4,886

Total \$ 42,523