

Status of the Maldives Pilot Tuna Tagging Programme - Dec 2003- June 2004.

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Introduction

Maldives has undertaken two successful tagging experiments; one during 1991 and other during 1993 –1995. The releases in these experiments were entirely from the Maldivian fishery. As a result about 98% of the 2,000 or so recoveries were made from the Maldivian fishery itself; only 50 recoveries were made from overseas fisheries. Thus a major drawback of the programmes was that releases occurred only in the local fishery and therefore it was not possible to quantify the interaction between the local fishery and the rest of the Indian Ocean's.

The Indian Ocean Tuna Tagging Programme (IOTTP) offers a unique opportunity to conduct simultaneous tag releases that should provide information on fishery interactions and the relation between various fishery components. Although the main release centre would be the western central Indian Ocean, plans are there for releasing tags from various platforms and fisheries'. As activities complimenting the primary goals of the IOTTP, the Indian Ocean Tuna Commission has been funding small scale tagging programmes for various fisheries.

The Maldivian proposal to tag 5,000 tunas was approved and signed in December 2003. Under the terms of reference tags would be released opportunistically from local pole-and-line fishing vessels, similar to the previous times. It is expected that composition of release would be about 80% skipjack tuna and the rest yellowfin and bigeye tuna. The intended area of release would be the west of the northern atolls (see figure below). A reason for the choice of this area was to release close from the Lakshadweep (Minicoy Island) fishery where pilot tagging activities have also been proposed.

Preparations

The success of the previous two programmes very much depended on the cooperation of the fishermen and tuna buyers which was built through regular radio interviews media coverage and networking between MRC and various stakeholders of the tuna industry. Taking a similar approach preparations were made before the release event. Specially designed tag recovery forms were (Appendix 1) distributed to all 212 inhabited islands and all tuna buyers, collecting vessels and shore-based tuna buying/collecting facilities in the country. These were sent away in May 2004. Along with the recovery forms, the tagging poster, pencils and measuring tapes were also sent to each potential party. At the Malé fish market arrangement

were made with the Ministry's field officer for providing tag recovery forms for recoveries from Malé fishermen.

In terms of tagging equipment a tagging cradle was designed for large yellowfin tuna (see photo below). This was intended for archival tagging that may be required during the main phase of the project. Regular wooden one-meter measuring boards were fabricated for routine use on tag cruises. For easy dispensing of tags applicator sleeves were prepared. This would hold 50 applicators and can be wrapped for safety and keeping clean (photo).



Tagging Equipment: Applicators in sleeves (right) and large cradle (frame only) for tagging large yellowfin fish (left)

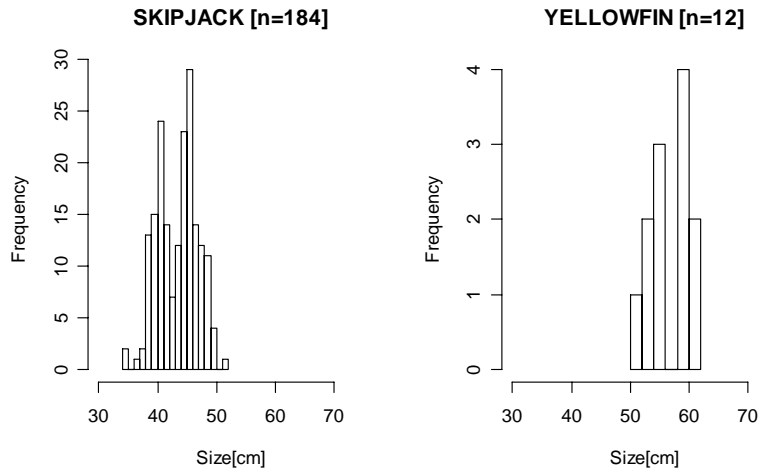
Progress so far

After some delays the programme was officially launched on 15 May 2004. Because MRC staff who took part in the tagging cruises of the earlier programmes no longer work at the Marine Research Centre, a training cruise was necessary for providing field staff a first hand field experience of tagging on pole-and-line vessels. The training trip was organized from Malé. Ten staff members from MRC took part on this trip.

Similar to the procedures followed in the previous programmes three-members form a tagging team; a tagger, fish-holder and a recorder. Each person practiced his/her particular duties to perfection. They would be assigned to the same task during the entire programme so that standards and consistency are maintained.

Importance of choosing good quality fish and proper recording procedures were shown. Good practice of sterilizing the applicators before each trip (every release event) and loading the tags in sleeves prior to the trip was highlighted as good practices.

A total of 199 tuna (186 skipjack and 13 yellowfin) were released on this trip (figure). Fishermen were paid US\$ 5.00 (all < 100 cm FL) for each fish released. So far 4 recoveries have been made and a cash reward has been paid. MRC would be the main centre where cash rewards would be disbursed. To facilitate this a petty cash fund would be managed at MRC.



Size distribution of the skipjack and yellowfin tuna releases during the training trip.



Locations of release: Blue dot indicate the point (a FAD) where tags were released during the training trip. The main area (circles) of the release in the programme would occur in the north of the Maldives.

Baitfish

As mentioned earlier, the training trip was conducted from a regular masdhoni on a routine fishing trip. The vessel employed light bait fishing at night which is now popularly being practiced in southern atolls. The details of the operation and bait catch were noted.

The masterfishermen on the boat believed that bait fishing was better during the early morning before dawn. It is not uncommon, however, for light baiting to be successful anytime during dark hours. But on this particular fishing trip the light was turned on at 03:15. A single 1000W flood light was attached onto a purpose built wooden frame fixed on the side of the masdhoni. A portable 2KW generator was used to power the light.

The bait ground was a small lagoon reef (inside atoll) in the south Ari Atoll. The water depth was around 15-20 meters. During the operation the vessel was not anchored. Within about half an hour schools of baitfish were seen schooling underneath the light. Few scattered individuals were at the surface but the dense school formation occurred only at sub-surface. Once aggregations grew large a square lift net (mesh size ~ 5 mm) of about 30 x 30 feet was deployed using 4 poles attached to the corners. The net was deployed taught sliding down and touching the hull of the masdhoni to spread out underneath the bait school once enough depth was achieved. At the same time a piece of card-board was used to cover the light 'on and off', giving a flicking effect, which made the school to surface and form tighter aggregations. The net was then quickly hauled and the bait dumped to the flooded hull.

Haul #	Estimated Wt (Kg)	Cumulative total (kg)
1	5	5
2	3	8
3	3	11
4	5	16
5	5	21
6	4	25
7	5	30
8	20	50
9	15	65
10	4	69
11	5	74
12	7	81
13	9	90
14	100	190
15	50	240
16	5	245
17	2	247
18	10	257
19	70	327
20	100	427

A total of 20 hauls were made (above table) catching an estimated total of 427 kg of bait. The entire catch consisted of two species, Rehi (*Spratelloides gracilis*) and Miyaren (*Encrasicholina hetereloba*) roughly in proportions of

70% and 30% respectively. There was no by-catch at all although 2 squids that came half-way during the operation were caught. The baiting was over about 05:00. The baiting was stopped because the bait wells were completely full, not because there was no bait. The entire bait catch was utilized for the day's fishing (total catch 4800 tunas).



Light baitfishing: Attracted bait been scooped in the lift net (right). Powerful flood lights (> 1KW) are used to attract bait.

Planned activities:

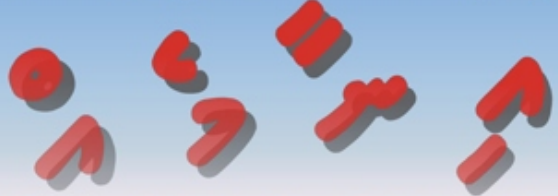
The trips planned for the north will be conducted during late July/August. If the fishing is good it is expected that more than 2000 tags would be released. Double tagging would be conducted on opportunistic basis.

MRC will continue its publicity through radio and local newspapers. It is expected that IOTC's publicity programs would improve overseas recoveries

Appendices:

- 1: Tagging Poster
- 2: Tag release form
- 3: Tag Recovery Form

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FORK LENGTH

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iotc Indian Ocean Tuna Commission
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TUNA TAGGING DAILY RECORD

Survey:	Trip:	Date:
Departure time:	Vessel name:	No. of crew:
Team leader:	Registry number:	Hookers:
Team members:	Captain's name:	

BAITING

Baiting started:	Sea surface temperature:	Visibility:
Baiting ended:	Number of hauls:	
Species composition:	Total weight of bait:	Samples:
1:	Estimated / Measured:	
2:		
3:		

SCHOOL DATA

Schl. no.	Time sight	Time start	Time end	Assctn.	Detection method	Sea temp.	Weather	Wind	Remarks

FISH SUMMARY

Size	No. Tagged	No. fished	Total
Yft < 80 cm			
Yft 80 - 100 cm			
Yft > 100 cm			
Yft total			
Skj total			

ASSOCIATION

- 1 Free swimming school
- 2 Log
- 3 FAD
- 4 Marine mammals or whale sharks
- 5 Current line
- 6 Near reef

WEATHER

- 1 Fine
- 2 Good
- 3 Bad
- 4 Worse

WIND

- 1 >15 mph
- 2 10 - 15 mph
- 3 5 - 10 mph
- 4 <5 mph

DETECTION METHOD

- 1 Visual surface
- 2 Birds
- 3 Trolling
- 4 Via association

