

Tuna Tagging Program in the Eastern Indian Ocean by Tuna Purse Seine; MV SEAFDEC

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ABSTRACT

SEAFDEC has initiated on tuna tagging program in the Eastern Indian Ocean on MV SEAFDEC from 22 October to 28 December 2003 by funding of the Japanese Government in order to assist the IOTC under the Indian Ocean Tuna Tagging Program (IOTTP) and provide all tagged data to serve in the IOTC database. Tuna for tagging program were selected from purse seine gear by using of scoop net for 15-60 minutes before harvesting the catch to on deck.

From the results of 7 fishing operations, a total of 1,000 tuna (930 yellowfin tuna and 70 skipjack) were tagged and released. Yellowfin tuna was ranged from 29 – 79 cm while the skipjack was ranged from 40-67 cm. One tagged tuna was recaptured after one month released, away from the released position 390 nm to the east.

Introduction:

Refer to the IOTC tuna tagging program in the Indian Ocean which was started since 2002, to know the movement and growth at given size of tuna (yellowfin, bigeye and skipjack tuna) in the Indian Ocean, the tagging of tuna is one of the method for this event. SEAFDEC/TD has proposed to assist the tuna tagging program in the Eastern Indian Ocean by using a purse seine type namely, MV SEAFDEC while IOTC mostly focus their activities in the western Indian Ocean. All tagged data collected by MV SEAFDEC, was sent to IOTC for further analysis and serve in the IOTC database system.

TD has initiated on tuna tagging since 2002 by conducting the Shipboard training for tuna tagging technique to our tagging team on board MV SEAFDEC (Figure1). In 2003, the tuna tagging program was carried out by using FADs (Figure2) in the Eastern Indian Ocean for two months from November to December. The results of tuna tagging program are described in this report.



Figure1: MV SEAFDEC



Figure2: FADs

Materials and Methods

1. Dart Tags and Applicator (Figure3)

One thousand of IOTC standard dart tags were used. Dart tags were 14.5 cm in length and 0.2 cm in diameter. The barbed head had a length 1 cm an angle of 35°. Each tag is marked with a unique identification number as well as information telling the recapture how to contact the researchers responsible for releasing the tagged fish. The applicator had a length of 17 cm and a diameter of 0.4 cm. For convenience during tagging, the applicator was marked with tape/stopper 3 cm from the tip.

2. Measurement board and Scoop Net (Figure4)

Measurement board consisted of a ruled canvas sheet attached to a wooden frame. Wooden frame was 100 cm in length, 55 cm. in width and 11 cm. in height. Canvas sheet was 90 cm. in length and 45 cm. in width.

The Scoop net consisted of a net (Polyethylene – PE10.0 mm. mesh size) attached with a bamboo pole 3 m. long.



Figure3: Applicator and dart tag from IOTC



Figure4: Measuring board and scoop net

3. Tuna Tagging Method (Figure 5)

Sampling of tuna for tagging were from tuna purse seine operations. A scoop net was used to select/catch alive tuna especially yellowfin tuna from the purse seine net. Tuna were placed on the measurement board for length measurement and tagging. Dart tag was inserted into the dorsal muscle of the tuna below the middle of the first dorsal fin. Tuna were released immediately after tagging. Each operation could be done within 15 – 60 minutes before loading of all catch to fish hold.



Figure5a: Scooping



Figure5b: Measuring & Tagging



Figure5c: Releasing

Results

1) Tagged Tuna

A total of 7 fishing operation was carried out at different locations, and the number of fish tagged and released were summarized in Table 1 and Figure 6. 1,000 fishes were tagged and released consist of 930 yellowfin tuna sizes ranged from 29-79 cm fork length and 70 skipjack sizes ranged from 40-67 cm, respectively. Figure 7 shows the length frequency of the tagged yellowfin tuna (a) and skipjack tuna (b). Tagged fishes released into the sea was mostly observed to be active and dive down very fast as shown in Figure 8.

Table 1: Results from tagging

No.	Date	Position		Yellowfin		Skipjack		Total No. Tag
		Long.	Lat.	No.Tag	Size range	No.Tag	Size range	
1	18 Nov. 2003	079_51.5 E	07_07.2 S	49	29 - 74	1	47	50
2	24 Nov. 2003	086_33.4 E	05_18.8 S	233	42 - 73	17	41 - 67	250
3	25 Nov. 2003	088_42.4 E	04_27.5 S	169	43 - 73	31	43 - 55	200
4	17 Dec. 2003	087_45.5 E	05_33.1 S	180	41 - 79	6	44 - 55	186
5	19 Dec. 2003	089_36.1 E	05_07.2 S	143	45 - 75	10	43 - 54	153
6	21 Dec. 2003	094_54.6 E	05_53.4 S	73	43 - 76	2	40 - 43	75
7	22 Dec. 2003	095_13.4 E	04_20.3 S	83	44 - 76	3	44 - 48	86

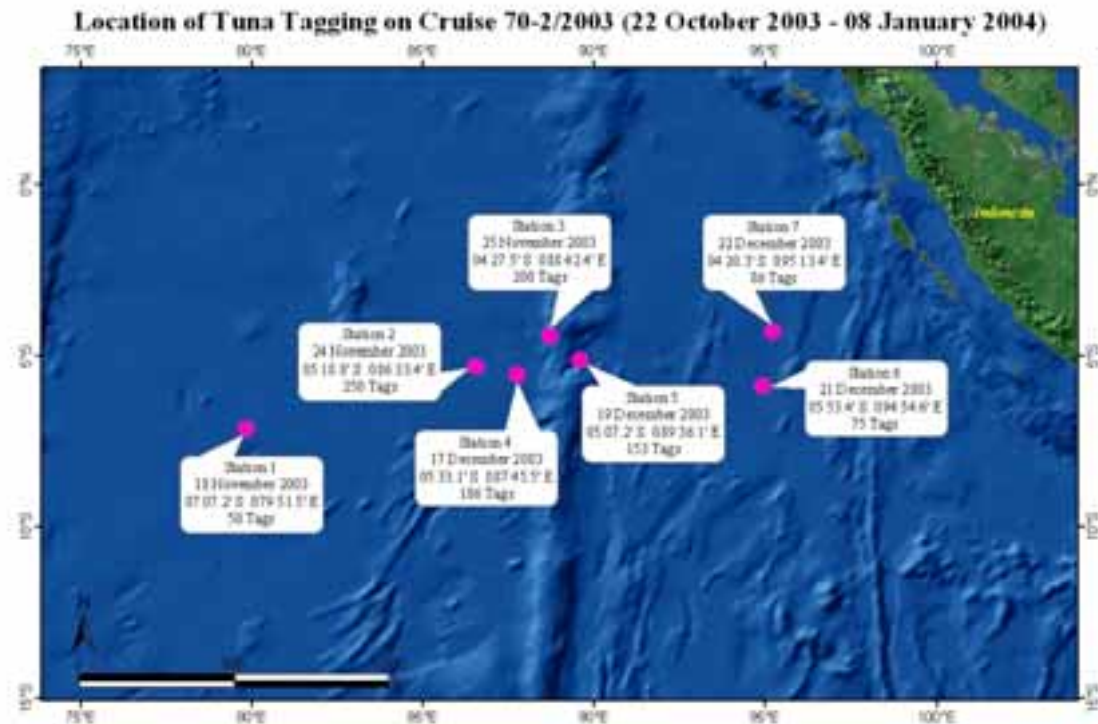


Figure6: Geographical characteristic of tagging positions

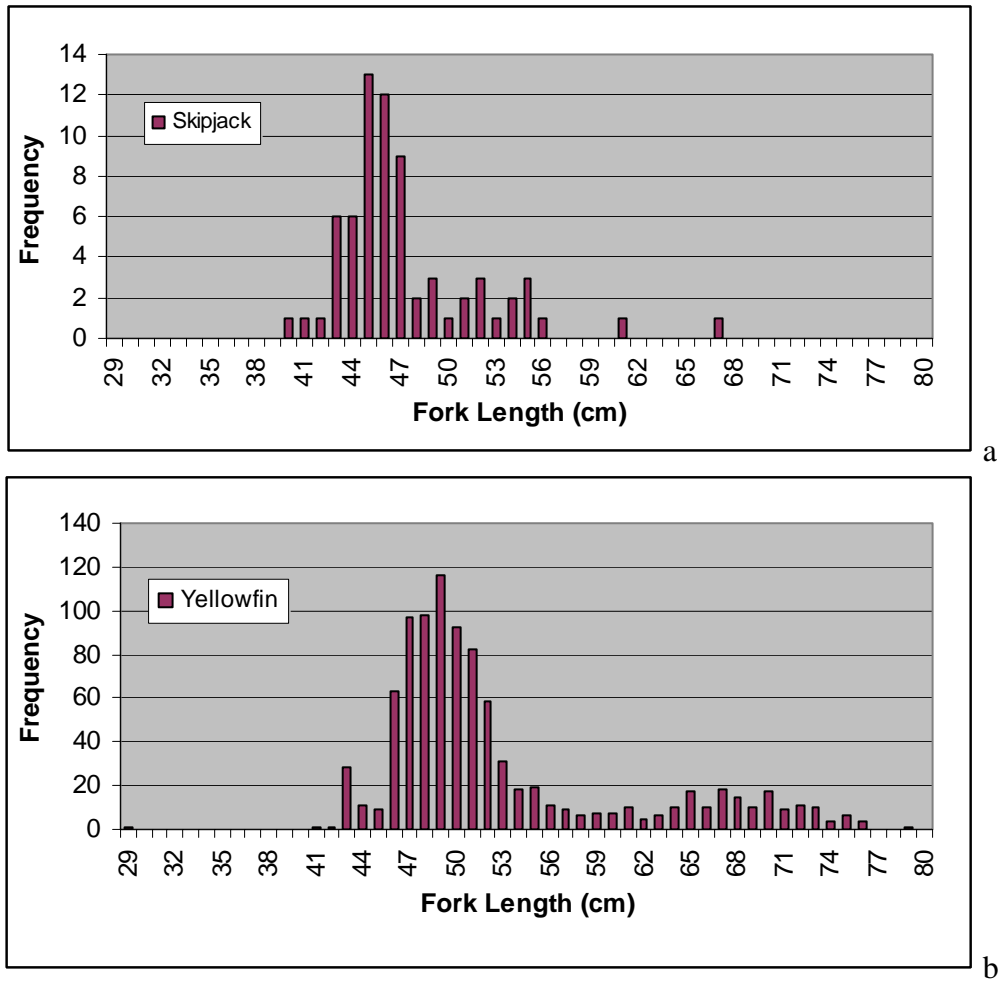


Figure7: Length frequency of tagged fishes

2) Recapturing of Tagged Tuna

One tagged Yellowfin tuna No.AA12312 was recaptured on 22 December 2004 at Lat. 04_020.3'S and Long. 095_013.4'E (Operation No.7) which it was released on 25 November 2003 at Lat.04_027.5'S and Long. 088_042.4'E (Operation No.3) (see Figure 6). The distance between release and recapture point was computed about 390.6 Nautical miles and the fork length increased from 50 cm. to 55.5 cm (see Figure 9).

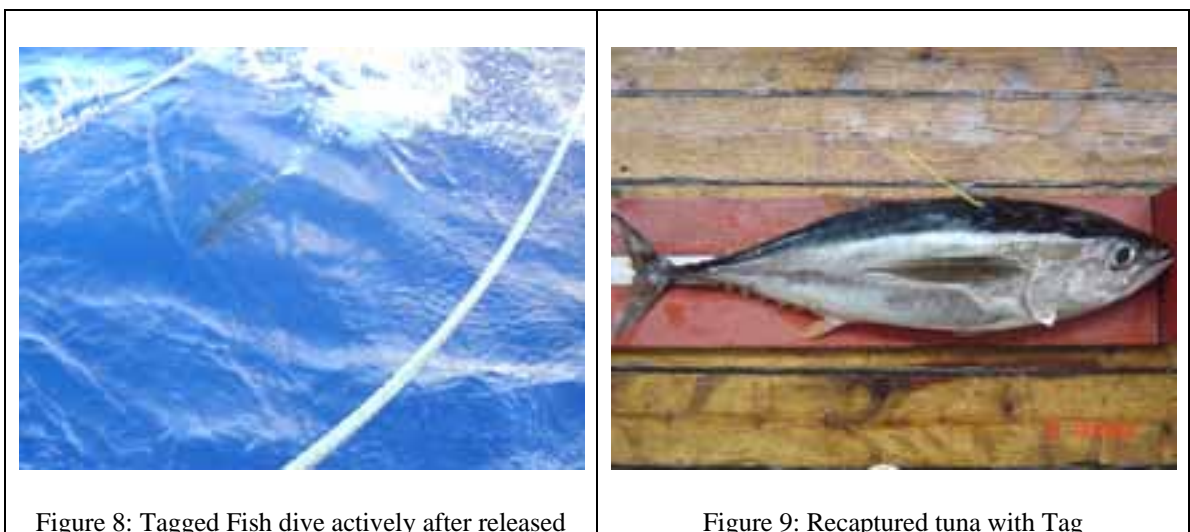


Figure 8: Tagged Fish dive actively after released

Figure 9: Recaptured tuna with Tag

Discussion

In each tuna tagging operation, the number of tagging depended on the sea condition and time of purse seine operation. Sea conditions such as wind speed, wave height and weather, were the main factors for the number of tunas tagged. Some operations had bad sea conditions and the researcher could tag and release a low number. If the time of purse seine operation was long, the fish in the purse seine became exhausted and died and the researchers choose tagging only physically strong tunas. When the researchers inserted the applicator into the fish's dorsal muscle below the middle of the first dorsal fin and then pulled the applicator out, the inner of applicator had some fish meat and one tuna that was recaptured showed an infected wound from tagging (Figure 9). It meant the applicator was bigger than the dart tag. This problem can be rectified by reducing the diameter of the applicator to fit with the dart tag.

Acknowledgement

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