

WORKING PARTY ON DATA COLLECTION AND STATISTICS

IOTC-OFCF Sampling Programmes: Status Report

INTRODUCTION

In spite of the efforts of IPTP and IOTC, there are still important gaps in the information necessary to best manage tuna resources in the Indian Ocean. These inadequacies affect all types of data requested by IOTC, but can be illustrated by the problems affecting the most fundamental type of data, the nominal catch statistics. Despite the fact that these highly aggregated data are the most likely to be available from reporting sources, more than 40% are considered of poor or uncertain quality. The situation is particularly serious regarding the availability of data on size composition of the catch, information which is fundamental for most modern stock assessment techniques and which is missing for important fisheries in the Indian Ocean.

In 2001, contacts were established between the IOTC Secretariat and the Japanese Overseas Fishery Cooperation Foundation (OFCF) to propose a project that would address the main needs regarding data collection and statistics in developing countries of the region. This project, currently under way, benefit from the funding from OFCF and involve the participation of staff from the Secretariat, working in conjunction with one fisheries expert detached to the Secretariat by OFCF. The present paper deals with the objectives of the programme and the results obtained during the first year of operation in Thailand and Indonesia.

BACKGROUND

Fresh-tuna longline vessels have been operating in the Indian Ocean since 1973, using ports located mainly in the East. Landings occur mainly in ports in Indonesia, Singapore, Malaysia, Thailand, Sri Lanka, Seychelles and Maldives. The amount of fresh tuna longliners active in the Indian Ocean has been dramatically increasing since the mid-eighties, to reach the more than 2,000 ships recorded to operate in 2003. Large tuna fish caught by these vessels is highly profitable as its meat is suitable for making premium sashimi (fresh tuna) and in high demand in the Japanese markets. About 60% of the catches landed from these vessels are air-freighted to Japan or, more recently, the USA.

The majority of the vessels have been operating under the flags of Taiwan,China, China and, more recently, Indonesia. The catches, effort and size frequency statistics of these vessels have almost never been properly reported to the IOTC¹. The OFCF-IOTC Project is currently monitoring data collection in several ports in Thailand and Indonesia.

¹ Only China has been reporting catches and effort of fresh tuna longliners operating under the Chinese flag since the beginning of their operation.

The OFCF took over the financing of Sampling activities in Thailand (Phuket) in 2002, covered so far by the IOTC (2000). A fleet of about 200 fresh tuna longliners, mainly from Taiwan,China, have been putting in to Phuket since 1994. Current catches are estimated at about 4,000 tonnes. The sampling activities are carried out by three staff from the Andaman Sea Fisheries Research and Development Centre (AFRDEC) under the supervision of a Senior Marine Biologist.

The development of fresh tuna longlining in Indonesia has been dramatic during the last decade, with more than 2,000 vessels recorded to operate in the Indian Ocean in 2003 and catches estimated to about 70,000 t. These catches, as estimated by the IOTC Secretariat, include mainly tropical tunas but also billfish and sharks. This puts Indonesia as the second longline fishing fleet in the Indian Ocean, only second to Taiwan,China. The lack of reporting to the IOTC in recent years and the poor quality or incompleteness of the statistics available from other sources made it a priority for the IOTC-OFCF Project to assess whether any specific actions could be taken to improve the collection and reporting of statistics to the IOTC. Two Memorandums of Understanding were signed between the IOTC/OFCF and the Directorate General of Capture Fisheries (DGCF) and the Research Institute for Marine Fisheries (RIMF) of Indonesia after several missions to the country. The Project covers the collection of different types of data on fresh tuna longliners in Jakarta and Cilacap as well as vessel record and vessel activity information from different institutions. The Indonesian monitoring involves also the participation of ACIAR/CSIRO² from Australia, institutions that had been involved with the collection of data from fresh tuna longliners in Benoa since 1992. About 25 scientists, data input persons and port samplers are currently working through this multilateral cooperation.

OBJECTIVES OF MONITORING

Estimation of Total catches of fresh tuna longline fleets operating in the Indian Ocean

The main objective of these programmes is to collect historic and current information regarding the activities of non-reporting longliners in the Indian Ocean in order to be able to estimate their catches as accurately as possible.

Fresh tuna longliners put in to many ports in the Indian Ocean the landing operations do not vary much among the different landing sites. The catches of single vessels are almost always unloaded to processing plants in each port, where each individual specimen is graded and labelled as export and reject according to its quality. By-catch

² Add Full Names

specimens are either handled at the processing plants or put aside on the harbour and sold directly to local buyers.

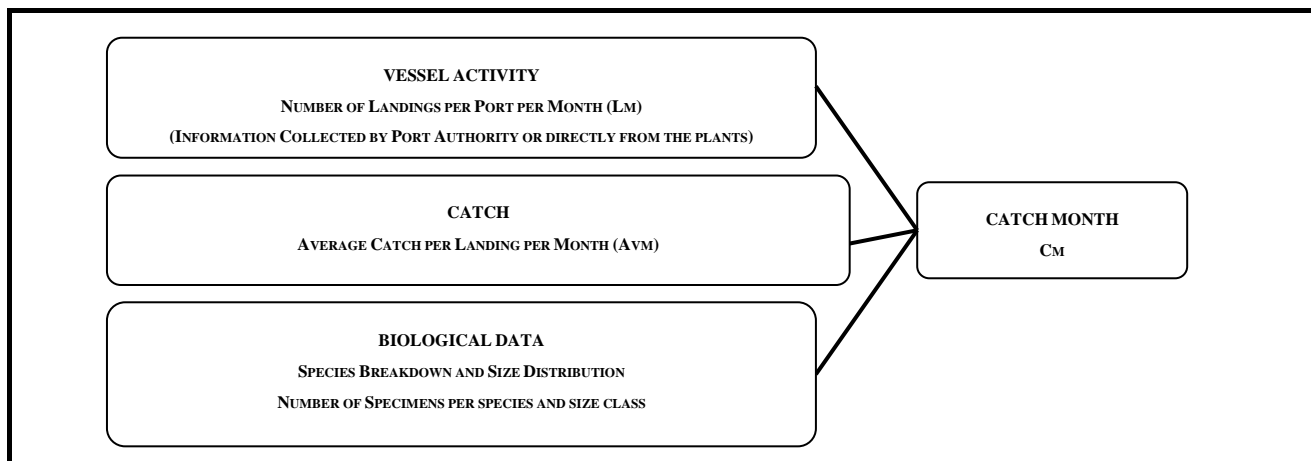
Thus, a random coverage of the landings occurred in each port where there is a sampling program is needed to obtain the most accurate estimate of the statistic population (i.e. total catches unloaded to the port for a given period). The landing is, therefore, the Sampling Unit.

Regarding the strata to be considered, these are the

following:

- Spatial strata: Processing Plant
- Time strata: Month
- Fish quality strata: Destination (export, reject, by-catch)

The figure below shows the type of data needed to calculate the catches of fresh tuna longliners in a port during a given month:



$$CM = LM * AVM$$

The above formula changes according to the specificities of each port. Thus, in ports where the by-catch fish is not handled at the processing plants, the sampling strategy is different being the total landings of by-catch fish estimated separately.

Collection of Size frequency and biological data

The second objective is to collect size frequency statistics through sampling and the retrieval of historic and current data from tuna operators or buyers.

Tuna landings are monitoring through sampling at processing plants, on the docks and/or on-board, depending on how catches are landed, to obtain the breakdown by species and size distribution as well as other biological data (length-weight and length-length data).

Compilation of Vessel Record Data

The names, identification and characteristics of fresh tuna longline vessels are collected from different sources and a vessel record built for each country.

PROGRESS ACHIEVED

Table 1 below shows the number of fish measured (mostly processed weights) and number of length frequency data available per species and total in the ports where there is

IOTC-OFCF monitoring³. The collection of this information has allowed the estimation of average catches per species and landing in all ports where sampling was conducted.

The collection of vessel record and vessel activity data in each port has allowed building records including the Longliners operating in each country and the number of vessel arrivals per port and number of landings to each processing plant.

The information available allowed the estimation of catches per fleet (flag), species and month in Thailand and will allow conducting the same type of estimate in Indonesia and other countries. Charts 1 to 5 show examples of size frequencies of important species going through monitoring. The collection of this type of data is of utmost important for the IOTC taking into account the scarcity of size data for longline fleets available at the IOTC Secretariat.

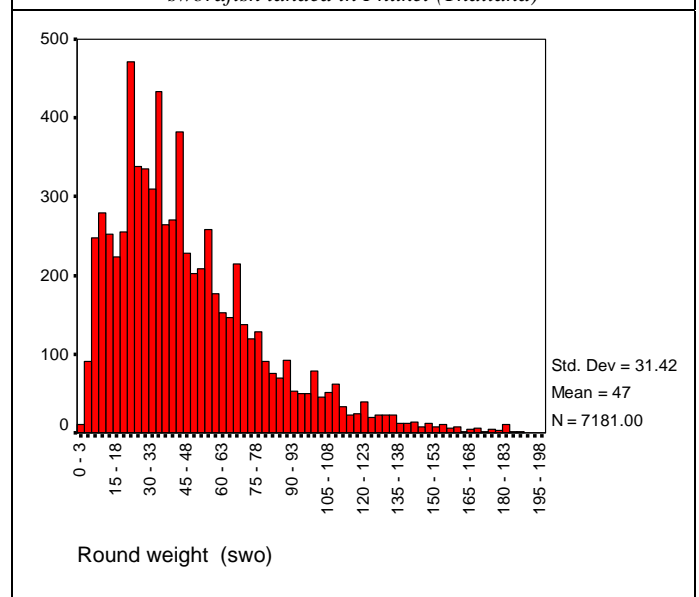
³ More details about the number of fish sampled can be found in WPDCS-03-01

Table 1: Number of fish monitored in Thailand, Malaysia, Sri Lanka and Indonesia from 2000-2003; noS: Total number of specimens sampled and noL: Number of length measurements

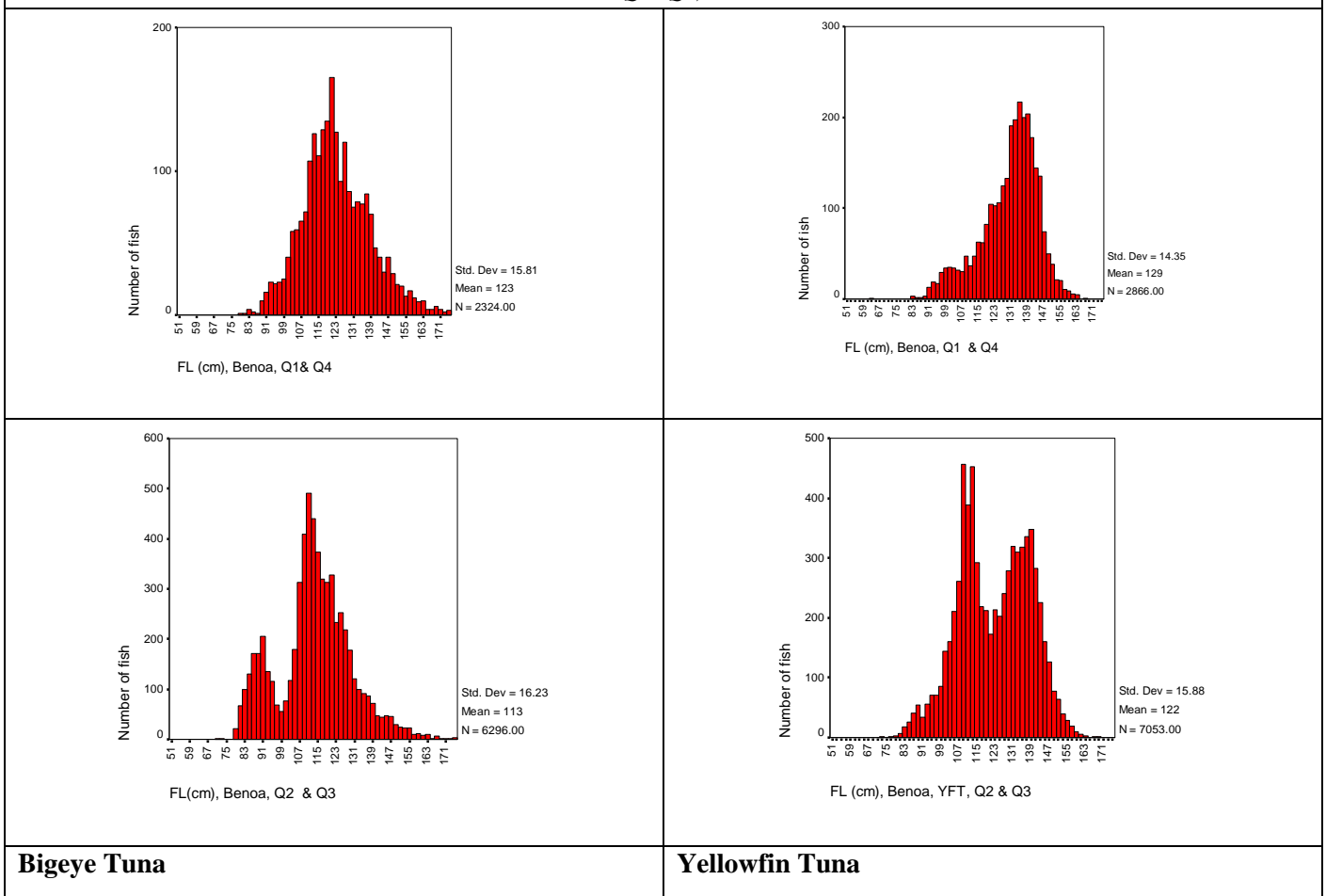
		YFT		BET		SWO		OTH		TOTAL	
		noS	noL	noS	noL	noS	noL	noS	noL	noS	noL
2000	Jan-Dec	16,982	1,630	6,853	376	1,459	187	3,993	224	29,287	2,417
2001	Jan-Dec	31,170	3,988	23,490	2,626	3,077	279	18,556	682	101,817	7,575
2002	Jan-Dec	82,876	16,644	86,881	18,262	6,524	781	60,361	4,901	251,315	40,588
2003	Jan-Jul	137,032	42,510	70,462	20,310	6,382	1,155	66,831	2,062	280,707	66,037
Total		268,060	64,772	187,686	41,574	17,442	2,402	149,741	7,869	663,126	116,617

The collection of length-weight and length-length data since the beginning of the programme has also allowed building biological databases in each country. This is of key importance taking into account the lack of information of this type from Longliners. Charts 6 to 10 in the following pages show examples of the type of information that becomes available thanks to the collection of biological information in ports monitored through sampling.

Figure 1: Size frequency distribution (round weight) of the swordfish landed in Phuket (Thailand)



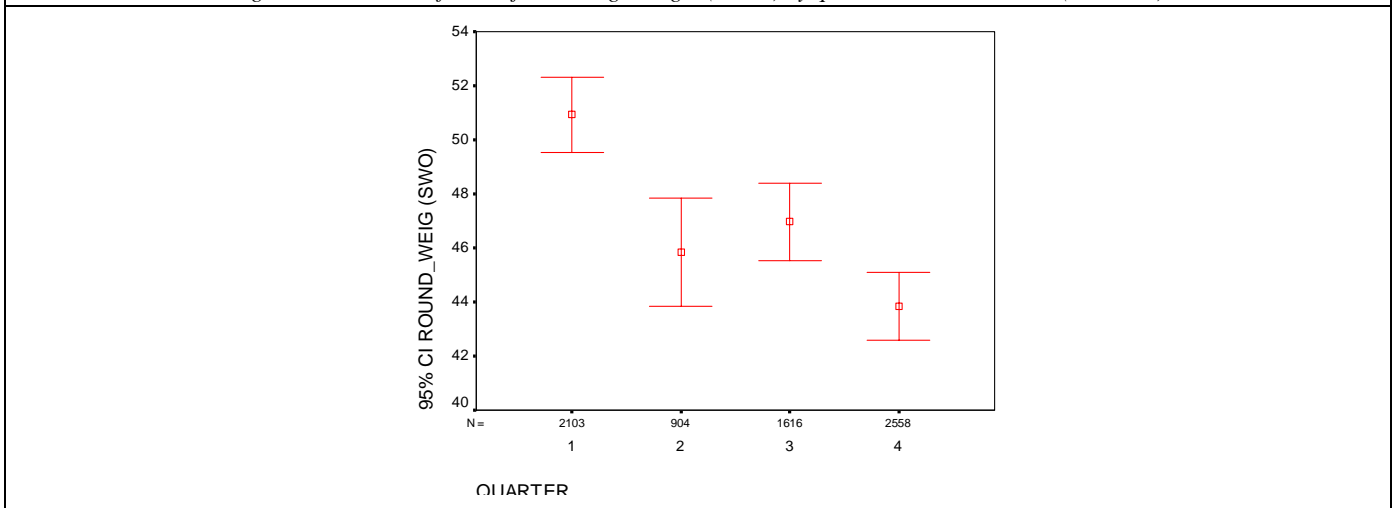
Figures 2-5: Size frequency distributions of Bigeye Tuna and Yellowfin Tuna sampled in Benoa according to the monsoon season (Q1&Q4, Q2&Q3)



Bigeye Tuna

Yellowfin Tuna

Figure 6: Evolution of Swordfish average weight (round) by quarter landed in Phuket (Thailand)



Figures 7-8 : Length-weight relationships for Swordfish from pectoral dorsal length (PDL) and Pectoral anal length (PAL) to round weight.

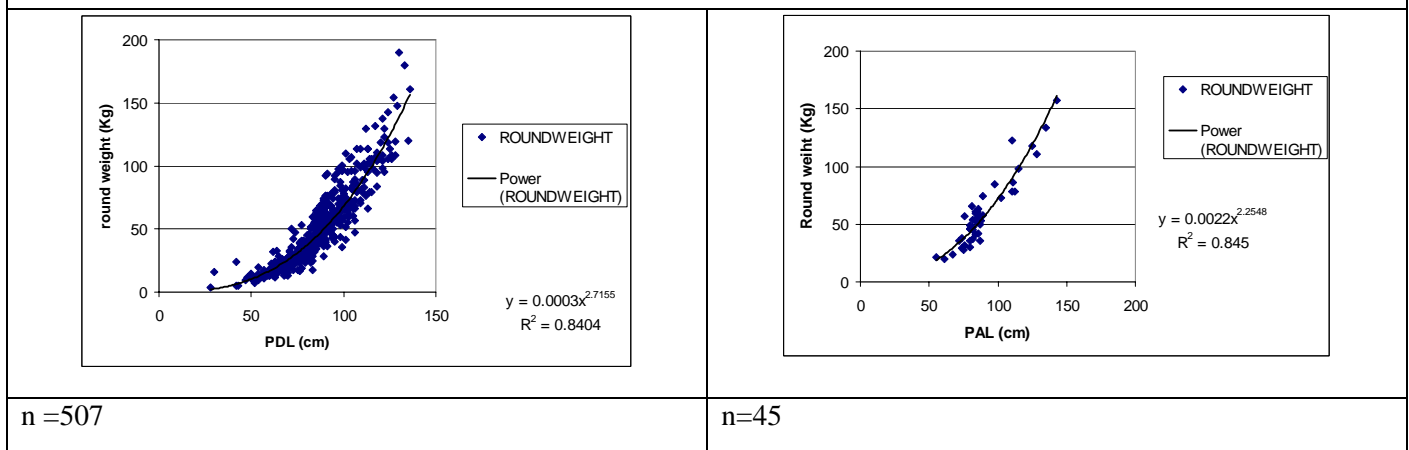
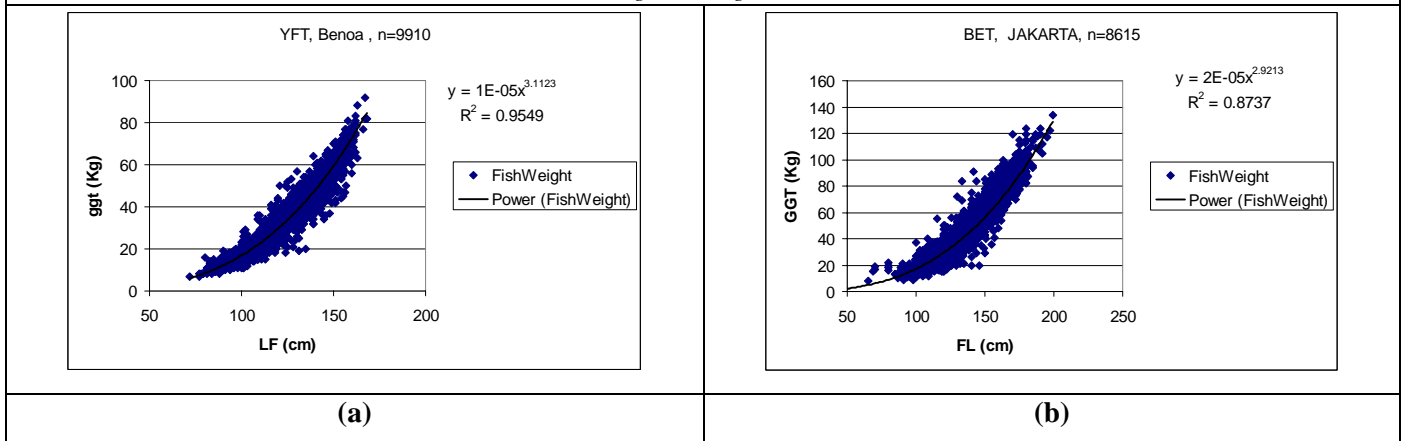


Figure 9-10: Length-weight relationships of Yellowfin Tuna in Benoa (a) and Bigeye Tuna in Jakarta (b): FL: fork length; GGT : gilled and gutted weight.



FUTURE PROSPECTS

The collection of information on fresh tuna Longliners operating in the Indian Ocean is of utmost importance taking into account the number of vessels and catches recorded for these fleets.

The fleets operating from Thailand, Sri Lanka, Malaysia, Seychelles and Maldives are mainly made up by vessels from Taiwan,China. Most of the vessels operating are not licensed to operate in the Exclusive Economic Zones of the referred countries, only using the ports for unloading and refuelling. The activities of these vessels were not or not sufficiently monitored in the countries were they were based and it is not likely that this situation change in the near future. Furthermore, no or very little statistics of Longliners below 200 GRT are collected in Taiwan,China. The monitoring of these activities through the IOTC-OFCF program is, therefore, needed if the collection of good quality data on the activities of fresh tuna Longliners wants to be maintained.

No foreign Longline vessels operate in Indonesia since 2000. The monitoring of the activities of this fleet will, therefore, be gradually handed over to the responsible

institutions in the country. It is likely that external funding be maintained for the next one or two years. The technical support from CSIRO and IOTC scientists will probably extend longer.