

An alternative solution to collect verified catch data and other scientific data  
related to the fishing operations carried out by the vessels less than 24m beyond  
Exclusive Economic Zone of Sri Lanka without observers on board  
(IOTC Resolution 11/04)

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## 1.0 Introduction

Sri Lanka, being a party to International Conventions and regional agreements related to responsible fisheries in the region, is committed to implement Conservation and Management Measures of IOTC (CMMs) ensuring the sustainability of tuna and tuna like species under management of IOTC. As such, to overcome shortcomings in the legal and management regime those hinder effective compliance with national, regional and international obligations of high seas fisheries, was well established during the last two years and a road map to address the issues and shortcomings in high seas fisheries management was prepared and successfully implemented, enabling the creation of a conducive environment to combat against IUU fishing in Sri Lanka.

All countries within the purview of IOTC are required to implement effective national observer deputation programmes in the IOTC area of competence. Accordingly, Sri Lanka too has to deploy scientific observers in compliance with IOTC resolution 11/04, in respect of vessels above 24m as well as vessels below 24 lengths fishing outside the Exclusive Economic Zone (EEZ).

Out of about 1615 active vessels operating in High Seas Sri Lanka had only one long line vessel over 24m in 2015 and less than 1% are in the range of 24-15m length category while the balance is in the 10.3-15 m ranges and far beyond the scope of international convention and guidelines. While Sri Lanka is fully supportive in combating IUU fishing and was able to subscribe to most of the requirements such as log books, standard gear markings, radio call signs, VMS transponders, de-hookers and line cutters on board in these smaller vessels, deployment of observers on board is constrained due to:

- **Safety:** Safety issues are more critical in smaller vessels with rather limited deck area where the observer will be in very close proximity to the fishing operations and associated activities, endangering his physical well-being.
- **Lack of space:** These boats are normally designed to accommodate a maximum of 4-5 crew members with meager personal comforts, in addition to taking substantial amounts of fuel, foods, water, ice, salt and fishing gear for a voyage of 21-28 days.

Lack of minimum requirements such as accommodation, sanitary facilities and safe working space will greatly compromise the work of an observer.

The length, width, deck area and facilities and the wheel-house arrangement in a typical artisanal type Sri Lankan vessel are not designed with an objective of facilitating an officer on board during fishing trips. Although the stability is tested and verified by the marine engineers it might be marginally enough for conducting fishing operations which requires greater tolerances and adaptation to dynamic conditions at sea. Although the fishers are capable of tolerating such harsh condition with minimum requirements, deploying an officer on board such a vessel and expecting him to do the same is unethical and practically not possible. However it is unique in the region that the Sri Lankan bona fide fishermen are engaged in high seas fishing in these small vessels as a subsistence fishery from the past. Details and the structure of a typical Sri Lankan fishing boat (13.7 m in length) is given in Annex-1.

- **Increased cost of fishing:** Fuel costs may increase in carrying an observer (extra 50-120kg weight) and there will also be a financial burden of maintaining observers including their payments. Leaving a crew member ashore to enable the vessel to take an observer may adversely impact on fishing operations leading to reduction in catch and income.
- **Working in inclement weather:** An observer might not be able to carry out his duties during harsh weather conditions and in rough sea conditions due to the lack of facilities on board.

Taking into consideration the factors, Sri Lanka has initiated an alternative strategy to fulfill the IOTC requirements under Resolution 11/04 and to overcome difficulties in deploying scientific observers on board vessels less than 24m. The objective of the whole exercise is collection and verification of fish catch data and other information to maximize the effectiveness of the IOTC objectives despite the above constraints.

## **2.0 Methodology adopted in the alternative observer scheme**

The proposed alternate scheme was developed in consultation with stakeholders consisting of the relevant officers of the Department of Fisheries and Aquatic Resources (DFAR), representatives of vessel owners (<24m), skippers, crew members and scientists from research institutes and experts from the universities. This was discussed in details during one of the stakeholder meeting held to finalize the SL-NPOA-IUU, and it was decided to carry out the activity on a pilot basis for a period of time to determine its effectiveness.

The scheme is designed to subject a fishing vessel to port inspection prior to departure for fishing and after return from sea to gather and validate data and information essential to improve the management of tuna and tuna like species in the Indian Ocean. Vessel position was monitored and verified through VMS.

According to IOTC Resolution 11/04, tasks to be carried out by an on board observer to collect, verify catch data and other scientific data related to the fisheries for tuna and tuna-like species in the IOTC area of competence are as follows:

- a) Record and report fishing activities, verify positions of the vessel;
- b) Observe and estimate catches as far as possible with a view to identifying catch composition and monitoring by-catches and size frequency;
- c) Record the gear type, mesh size and attachments employed by the master;
- d) Collect information to enable the cross-checking of entries made in the logbooks (species composition and quantities, live and processed weight and location, where available); and
- e) Carry out such scientific work (for example, collecting samples) as requested by the IOTC Scientific Committee.

The fishery officials who have already undergone observer training were deployed at the harbours to carry out the above activities. Necessary training and awareness building programs were conducted for fishery officials and owners, skippers and crew of the vessels. DFAR has closely monitored the program continuously by reviewing the progress to ensure meeting the objective of IOTC Resolution 11/04.

## **2.1. Inspection at departure**

Vessels were inspected to check whether the following legal requirements are fulfilled:

- Boat registration
- High seasfishing operation license
- Insurance
- Log book
- Functionality of Vessel Monitoring System (VMS)
- Call sign and SSB radio
- Skipper licenses
- Vessel marking
- Gear marking
- Gear types, specification & size
- Crew details
- Life safety equipments
- Target fishing area

Owner of the vessel is made compulsory to fill the “Boat Departure Form” (Annex 2) with relevant information and submit to the Authorized Officer in the fishery harbor. The Authorized Officer inspects the fishing vessel in respect of the above requirements before granting permission for departure. Finally, the vessel was checked by the NAVY/Coast Guard and authorized/certified for departure. Certified departure forms are submitted to DFAR by NAVY/Coast Guard.

## **2.2. Verification of the vessel cruise track and collection of other vital information through the Vessel Monitoring System**

Currently, all vessels fishing in high seas under High Seas Operation licenses are equipped with transponders according to the provisions of VMS Regulation of 2015. Monitoring of these vessels is being done by the Fisheries Monitoring Center (FMC) established at the Head Office of Department of Fisheries and Aquatic Resources. During and after the completion of a fishing trip by a vessel, the VMS unit receives position of the vessel at every four hours and accordingly a

cruise track report is generated for the whole fishing trip, which is then used to determine the compatibility of the cruise track with the fishing locations of the log book data.

### **2.3. Inspection at Landing**

The Fisheries officer deployed for the inspection of fish landings at fishery harbours inspect and record data and information as per the given format “Alternative Observer Programme-Information Form” (Annex 3). This inspection shall:

- a) Determine catch and by- catch species wise
- b) Record the gear type, methods employed during fishing operations
- c) Collect scientific data as per the given information including the length and weight data
- d) Carry out the measurements and estimation
- e) Cross check logbook and cruise track report for the position verification
- f) Cross check catch with log book for verification
- g) Make endorsements in logbook where necessary
- h) Check navigational equipments for verification of positions of the vessel if necessary
- i) Interview master and crew for verification of information including interactions with turtle, marine mammals, seabirds and other prohibited or restricted species.
- f) Check for the prohibited and illegal fishing gear or fish species (Compliance monitoring)

### **2.4 Reporting**

The land base alternative scheme covers 5% of total high seas fishing operations at each harbor every month. After the inspecting the landing, the Officer hand over the report to the District Fisheries Office and all reports collected are submitted to the Observer sub –unit of head office at end of every month. A shared database is maintained to input data collected by inspection officers at both district and head office level.

## 2.5 Verification

Verification of the data collected through departure forms, arrival/ landing inspections, VMS and log books is undertaken by the scientific observer sub unit of head office using an electronic format given in Annex-4. The official verification report generated by the High Seas Fisheries Unit using the VMS track data, IUU alerts and logbook data are also incorporated for this verification. Template of the verification report is given in Annex-5. A particular fishing trip is considered as verified and placed in the non - IUU category subjected to,

1. Compatibility of all on board requirements declared in departure forms, verified by officers (DFAR, NAVY or Coast guard) when leaving the ports and when arriving the ports through inspections.
2. Less than 10% variation of the declaration of species catches in log book data
3. Fishing operations carried out within permitted High Seas or in Sri Lankan EEZ
4. Absence of suspicion on disconnection of VMS transponder without informing DFAR
5. Precise Arrival / Departure dates
6. Satisfactory Position data
7. Absence of suspicion IUU activity at (International/Local) inspections at the time of verification

Scientific data (catch and effort) on the fishing operation is also collected based on the standards. Summary on methodology adopted in the alternative observer scheme is given in Figure 1.

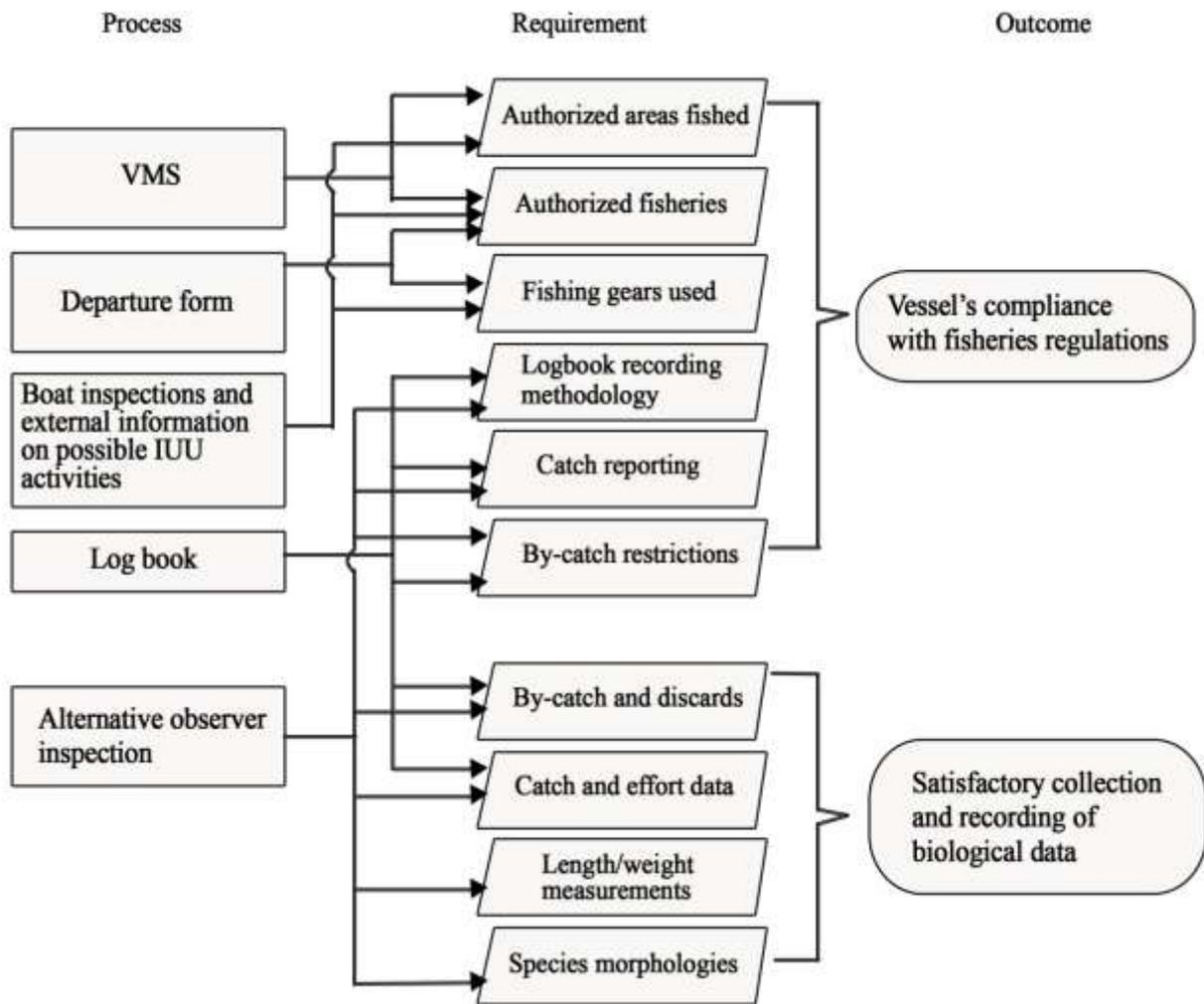


Figure 1: Summarized details on methodology adopted in the alternative observer scheme

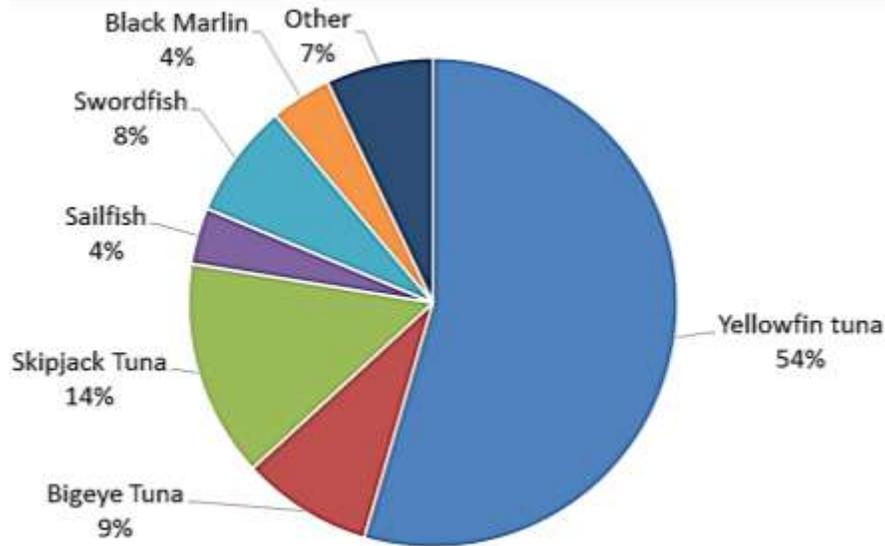
### 3.0 The pilot programme

The pilot alternative observer scheme was implemented from September 2015 as the coverage of VMS for high sea vessels was not significant before that. 5% of the vessels were included in the alternative observer scheme on a monthly basis according to the following schedule.

**Table 1: Number of pilot alternative observer scheme inspections carried out by DFAR from September 2015 to February 2016**

<b>Year</b>	<b>Month</b>	<b>Number of</b>
<b>2015</b>	October	54
	November	56
	December	53
<b>2016</b>	January	55
	February	43
<b><i>Total</i></b>		<b><i>261</i></b>

Alternative inspection data, log book data, VMS data were used in the analysis. No IUU activities related to VMS data were reported for the targeted vessels. The mean number of days per trip is  $17.6 \pm 0.91$  (SE). Mean number of fishing days per trip is  $6.30 \pm 0.62$  (SE). 37% of the boats used gillnets only, while 41% of the boats used long line only as their method of fishing. Rest (22%) used both types of gears (gill net cum longline). Main fish species in the catches were Yellow fin Tuna, Big Eye Tuna, Skipjack, Sword Fish, Sail fish and Black Marlin (Figure 2). Variation in the declaration of species catches in log book data with the port inspection data are given in Table 2.



**Figure 2: Catch composition of the high seas boats**

**Table 2: Variation in the declaration of species catches in log book with port inspection data**

Fish species	Scientific name	Average Catch $\pm$ SE (Kg)	% Variation
<b>Yellowfin Tuna</b>	<i>Thunnusalbacares</i>	1,429.36 $\pm$ 119.24	3.4%
<b>Bigeye Tuna</b>	<i>Thunnusobesus</i>	0226.71 $\pm$ 49.01	9.2%
<b>Skipjack Tuna</b>	<i>Katsuwonuspelamis</i>	0376.41 $\pm$ 92.41	1.9%
<b>Blue shark</b>	<i>Blue shark</i>	0009.83 $\pm$ 3.63	1.2%
<b>Silky shark</b>	<i>Carcharhinusfalciformis</i>	0024.17 $\pm$ 10.89	8.2%
<b>Wahoo</b>	<i>Acanthocybiumsolandri</i>	0009.72 $\pm$ 0.58	4.0%
<b>Sailfish</b>	<i>Istiophorus Spp.</i>	0097.56 $\pm$ 10.7	9.1%
<b>Swordfish</b>	<i>Xiphias gladius</i>	0199.12 $\pm$ 31.48	9.3%
<b>Blue marlin</b>	<i>Makairanigricans</i>	0079.2 $\pm$ 20.77	0.8%
<b>Black marlin</b>	<i>Istiompaxindica</i>	0105.53 $\pm$ 23.53	7.5%
<b>Short finmako</b>	<i>Isurusoxyrinchus</i>	0018.29 $\pm$ 4.64	8.1%
<b>Other marlin</b>	NA	0027.68 $\pm$ 6.79	0.2%
<b>Other sharks</b>	NA	0000.83 $\pm$ 0.01	0.7%
<b>Other Species</b>	NA	00015.9 $\pm$ 5.31	0.9%

#### **4.0 Conclusion**

It is explicable that Sri Lanka as an active CPC of IOTC is willing to corporate with resolution 11/04 by covering their high seas fishing fleet accruing to the standards. Relevant Officers of DFAR have undergo several national and international trainings and it is expected to conduct more in year 2016 according to the training schedules. On the other hand Sri Lanka deployed observers on-board in 100% of the vessels over 24m in year 2015. Five observer reports have been submitted for year 2014 and 2015.

Sri Lanka has initiated an alternative strategy expecting to fulfill requirements of IOTC Resolution 11/04 on deployment of observer in artisanal type vessels operating in high seas due to the practical issues of implementation related to safety, lack of space and minimum requirements, increased costs and inability to conduct observer duties under inclement weather and rough sea conditions.

Data on one fishing trip as a part of a sampling process to collect scientific data might not be worth compared to the cost and effort required to depute an observer in a small scale artisanal type vessel. Thus the alternative strategy was tried out for a period of 06 months in order to consolidate and improve the same based on the findings.

Analysis of the results show that the data gathered are acceptable within the ranges of satisfactory level and thus can be incorporated in the management process. As an example, variation of the declaration of species catches in log book data were recorded (less than 10%) and there is a possibility of identifying any IUU activity on board by incorporating logbook, VMS and Inspection data. Level of discards can also be detected up to some range.

Although it is impossible to achieve 100% of what a scientific observer on board can accomplish, the alternative strategy can be considered as a satisfactory solution to overcome the issue of covering observer duties in small vessels which are primitive in nature and with less equipment and facilities. Since Sri Lankan government is not in a position yet to remove these boats from the fishery due to the potentially vast impact on the livelihood of thousands of families who have been involved in the fishery for a significant period of time by means of traditional knowledge, it is

proposed to continue with the alternative strategy to comply with IOTC resolution 11/04.

However it is proposed to increase the percentage of the sample covered by the alternative observer inspection from 5% to 15% so that Sri Lanka will be able to gather scientific information from significant share of the landings.

It is also proposed to incorporate the proposed e-log book system with the alternative observer inspection process in order to increase the efficiency of collecting scientific data. The system is now in pilot stage and capable of gathering the catch data based on the location automatically detected by an electronic tablet. It is planned to implement the system among high seas fishing fleet of Sri Lanka within next three years. Details of the proposed e-log book system are given in Annex-6. It is proposed to add an application to the system allowing the operator to add pictures of bycatches and discards.

Accordingly Sri Lanka is willing to obtain the views and thoughts of all CPS to enhance the efficiency of the system as an alternative solution to collect verified catch data and other scientific data related to the fishing operations carried out by the vessels less than 24m beyond Exclusive Economic Zone without observers on board.

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## List of Annexes

Annex number	Topic
Annex-1	Specifications of a typical Sri Lankan high seas fishing multiday boat
Annex-2	Template of the Boat Departure Form
Annex-3	Information Sheet for Alternative Observer Programme
Annex-4	Electronic format to verify logbook and alternative observer inspection data
Annex-5	Template of the Verification Report
Annex-6	Functions of proposed E-log Book System for the high seas multiday fisheries vessels of Sri Lanka