RESEARCH PROPOSAL: AN EVALUATION OF DATA FROM ISSF-AFFILIATED CANNERIES FOR USE IN TUNA FISHERIES MANAGEMENT

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Purpose

This paper provides participants of the WPDCS with an overview of a five-months research activity to be carried on by a student of the University of Seychelles for a MSc in Marine Science and Sustainability, that aims to assess the usage of cannery sales data as a complementary dataset in support of tuna fisheries management, with the goal of routinely using this novel source of information for future assessment and as a complementary tool to reduce uncertainties in the available statistical data.

Objectives

The main aim of this research is to assess i) the possibility of, and ii) the effort required for using this type of cannery data information to improve the quality of the datasets received by the IOTC Secretariat, hence reducing the uncertainty in the data used for stock assessment, in particular for species composition and the traceability of the catches.

Sales data from ISSF-affiliated canneries mainly record details of commercial tuna species, as well as some details of the fishing operations, however, not all canning factories are affiliated with ISSF, hence the trading information available to tRFMOs is only partial.

Lewis & Williams (2016), noted several issues that WCPFC encountered when using the cannery data as part of their validation process for tuna catches, such as the lack of data from several large canneries in the Pacific Ocean (which are not affiliated with ISSF) and partial unloading recorded by small-scale canneries.

The specific objectives of this research are:

Objective1: complement the existing evaluation methods used to estimate the impact and extent of commercial tuna fisheries: logbook and landing data from national fishery authorities are the main source of data available for stock assessment and management purposes, and ISSF-affiliated cannery data have the potential to complement the information currently received by IOTC, as they provide several details on the activities of fishing vessels that are not regularly available (or submitted) to the IOTC Secretariat;

Objective2: contribute to the validation of regular statistical data submissions reported to the IOTC Secretariat (e.g. total catches, average fish weight estimates) to identify potential gaps and inconsistencies: such an independent data source is a powerful instrument for cross-verification and validation purposes;

Objective3: assess the magnitude of the tuna trade, as well as the trends in size categories of fish landed at the canneries: with the demand for tuna increasing worldwide, an analysis of the size categories of all traded fish will give an indication of the level of exploitation of the tuna resources, and therefore better insights on the impact of tuna fisheries on marine life.

Background

Overfishing of large pelagic fish such as tuna is often viewed as a result of shortcomings in the conservation and management measures put in place at regional level, such as low scientific observer coverage, and the lack of sharing requirements for VMS data (Barkin & deSombre 2013, Cullis-Suzuki & Pauly 2010). In the Indian Ocean, a major

impediment to the good knowledge of the stocks' status and definition of sound management measures is the general poor quality and reliability of catch data (Fiorellato et al. 2019). The compliance approach, leading to unresolved disputes over catch allocation are detrimental to catch and transparency of fisheries (Rattle, 2019). To overcome these shortcomings, the IOTC is actively considering alternative ways to improve the quality of the members' data. In 2018, during the annual IOTC Working Party on Tropical Tuna (WPTT), Herrera & Baez (2018) presented an alternative data collection method for the Spanish purse seine fleet, that relied on information collected from sale slips to provide better estimates to scientists and policy makers. This new data source could potentially address some of the concerns related to apparent inconsistencies in the reporting of yellowfin tuna (*Thunnus albacares*) catch data detected in recent years for a major purse seine fleet operating in the Indian Ocean (EU,Spain). Also, another report presented at the IOTC Scientific Committee (Zhu & Kitakado, 2019), highlighted uncertainties in the assessment of the albacore tuna stock, due to the limitations in fisheries and biological data available for its assessment. Uncertainties in the fisheries data available to the IOTC Secretariat have been repeatedly brought to the attention of scientists attending the IOTC working parties as an issue setting back the development of proper fisheries management measures.

The inability of fishing states to cooperate in ensuring conservation and optimum use of the migratory species, has led to unsustainable use of the marine resources, resulting in some fish stocks being at considerable risk of collapse (Allen, 2010). Accurate data are essential for the estimation of the standing stock of fish available for harvest, and more in general for better fisheries management. Reducing uncertainty in the input data is a challenging task (Hoyle, 2018), though various sources of information, such as scientific data collected by observers on board fishing vessels, are currently available. The limitation in the quality of the available data further extends when attempting to estimate catches from several artisanal and semi-industrial fisheries.

Besides the usual process of collecting data through logbooks (mostly performed by skippers) and by enumerators at landing sites, accessing reliable cannery sales data could also be crucial to improve the accuracy of the analysis on efforts and trade volumes.

Considering the nature and extent of sales data routinely collected by canneries, this research aims at assessing its potential as a proxy to estimate the definite volume and species composition of the catch recorded at landing for those fleets and fisheries whose catch is consistently sold to canning factories.

Acknowledging this situation, in 2009 the International Seafood Sustainability Foundation (ISSF) put in place an agreement with the tuna Regional Fisheries Management Organisation (tRFMOs), in order to provide sales data from associated canneries, recognizing the importance of such information to increase traceability of the products and further as an alternative data source to complement the official catch statistics received by tRFMOs.

Henceforth, canning companies report on a quarterly basis the extent of catch (by species and commercial size categories) bought by the different providers and offloaded at their processing facilities and the IOTC Secretariat, starting from 2010, has been one of the recipients of this data exchange. However, since the beginning, several setbacks have impeded the evaluation of these data and this has impacted their ability to be effectively used for stock assessment and fisheries management purposes.

Cannery sales data contain information about the fishing operations (including the gear, area and time of capture), as well as the volume of catch unloaded by species and commercial size category. Trading operations recorded by the canneries might refer to fish caught by purse seiners, pole and line or even longline vessels of the main pelagic tuna species such as yellowfin (*Thunnus albacares*), skipjack (*Katsuwonus pelamis),* bigeye (*Thunnus obesus*), and albacore tuna (*Thunnus alalunga*).

Some vessels, however, might be involved in (regulated) transhipment operations at sea, whereby cargo reefers can unload the catches at canning factories located all over the world, sometimes at a very long distance from the original fishing area.

On the basis of this consideration, this research activity will focus on the processing and evaluation of ISSF-associated cannery data as a complementary data source in support of the scientific work of the IOTC community.

Materials and Methods

The nature of the original data subject to this research required the proponent to undersign a confidentiality agreement and a non-disclosure form stipulating that the results of all analysis performed on the original data set must be aggregated to such a level of resolution so as to prevent the identification of the details of operation of any single vessel, in a similar way to the policy set out by IOTC Resolution 12/02.

Furthermore, ISSF has explicitly indicated that no identification details of the participating canneries may be disclosed, which required in turn further aggregation of the information available for this study - at least for dissemination purposes.

The research will mostly take the form of a desk-based study, with a preliminary phase requiring the pre-processing of all cannery data received so far. To speed-up this work, ISSF has hired an external consultant whose task will be to sift through all the original data submissions, remove those that do not contain any relevant information (e.g. data originating from oceans other than the Indian Ocean), and identify proper data submissions and subsequent updates to prevent double counting: for this purpose, the IOTC Secretariat has developed an interactive data processing tool to support the data clean-up process and ensure that the results of this processing could be stored in a properly standardized database. The workflow requires processing the original email submissions to extract the relevant sales record from the attachments to the emails. Attachments have then to be screened to remove all *false positives* (e.g. files that do not contain any relevant information[1]) and then processed by assigning proper transformation procedures to each column of the file in order to extract the core information and eventually produce a standardized CSV file that will contain the actual data and some relevant metadata such as the name of the cannery, its location and the reference quarter/year of the submission. Appendix III shows some sample screenshots from the processing tool.

The consultant contribution is extremely important to enable proper analysis of the extracted information, and eventually improve the standardization of all ISSF-canneries data.

The data submitted by canneries originated from various sources. Fishing vessels not necessarily offload their catches directly to the canneries, but in many cases, catches are transhipped either at sea or in port, and the catch is unloaded at its final destination by carrier vessels. The receipts from canneries record all these different unloading points. In some cases, the data submitted could be from the final offloaded points. Most of the time, the information received by the IOTC Secretariat includes details both for the original fishing vessels and the offloading carrier vessels operations. A high-level view of the structure of the information that could potentially be extracted from the cannery data submitted to IOTC is illustrated in Appendix IV, while appendix V presents a few selected examples of the various types and formats of submissions sent by the canneries to the IOTC Secretariat.

The species are classified by size categories during trading, and the catch detailed by species and size categories has generally been reported by fishing operations since 2010. This information is particularly important to enable detailed analysis of trend and variability in trading of the commercial species by fish size. A reference year will be set as baseline for the species size composition of the landing data.

Building effective relationships with canning factories representatives is crucial to properly understand the procedures leading to data reporting and collation.

Summary of data available

As mentioned above, following the signing of an agreement addressing the need to improve the data available to marine scientists, all ISSF-affiliated canneries started submitting data periodically to the IOTC Secretariat since 2010. As of today, over 400 quarterly reports - including offloaded catches of tuna species from the Indian Ocean and beyond, to canneries located all over the world - were received by the IOTC Secretariat, with around 33 distinct canneries reporting unloading and transhipment of tuna catches.

[1] E.g.: reference worksheets with instructions on how to fill the form, empty worksheets or worksheets containing exclusively data from other oceans

Most of these canneries are located in developed countries throughout Europe and America, although in recent years several key players have invested in developing countries with lower labour costs and proximity to the raw resources (Blaha, 2015).

The sources of the submissions are therefore either canning factories, directly, or the headquarters of the owning companies: though several transhipments happen in ports located in the Indian Ocean, catches could be offloaded in countries in Europe (e.g. Spain and Portugal, with canneries processing tuna for specific markets), or even in the American continent and the Pacific, in countries such as Mexico, the United States and American Samoa.

Appendix Ia includes a chart summarizing the number of submissions per year, while Appendix Ib presents a map with the geographical locations of the countries where canneries with offloaded catches reported to IOTC are situated.

The format of the cannery data submissions is extremely varied, and lacks standardization in particular at the beginning of the time series: in recent years, ISSF has formalized the basic data requirements for this exercise, which has been well received by several of their affiliated canneries, and whose details are reported in Appendix II.

Challenges

A significant challenge to this research is posed by the current global situation with the CoViD-19 pandemic and travel restrictions meaning liaison with canneries could only be conducted by exchanging emails and that it is impossible to visit canneries outside Seychelles to understand their process. Due to these restrictions, the focus is only on direct interactions with the sole tuna canning factory based in Seychelles (Indian Ocean Tuna, administered by Thai Union).

Conclusion

It is still premature to estimate the importance of this novel source of information and its contribution to enhance the monitoring and management of tuna stocks in the Indian Ocean, until an in-depth analysis of all ISSF-affiliated canneries data available to the IOTC Secretariat is completed. This project is therefore expected to contribute towards bridging the gaps in the data currently available for stock assessment purposes and help reduce its uncertainty, hence resulting in a more accurate estimation of stock reference points such as maximum sustainable yield (MSY).

With more appropriate reference points estimates for each stock, IOTC will have the knowledge required to be able to introduce more robust fisheries management measures to prevent overfishing of these species and to help to rebuild stocks which are already considered to be overfished and subject to overfishing such as yellowfin tuna. From an ecological perspective, the introduction of management measures informed by robust data will help to maintain or return tuna populations to sustainable levels which has the knock-on effect of improving the overall health of the marine ecosystem.

References

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Zhu, J., & Kitakado, T. (2019). Uncertainties in the 2019 stock assessment for Indian Ocean albacore tuna and suggestions of further researches in 2020 for improving the assessment and providing management advice. *IOTC Scientific Committee.* Karachi: IOTC, IOTC-2019-SC22-13, 5p

Appendices

Appendix Ia-b: Summaries of ISSF-affiliated data submission to IOTC

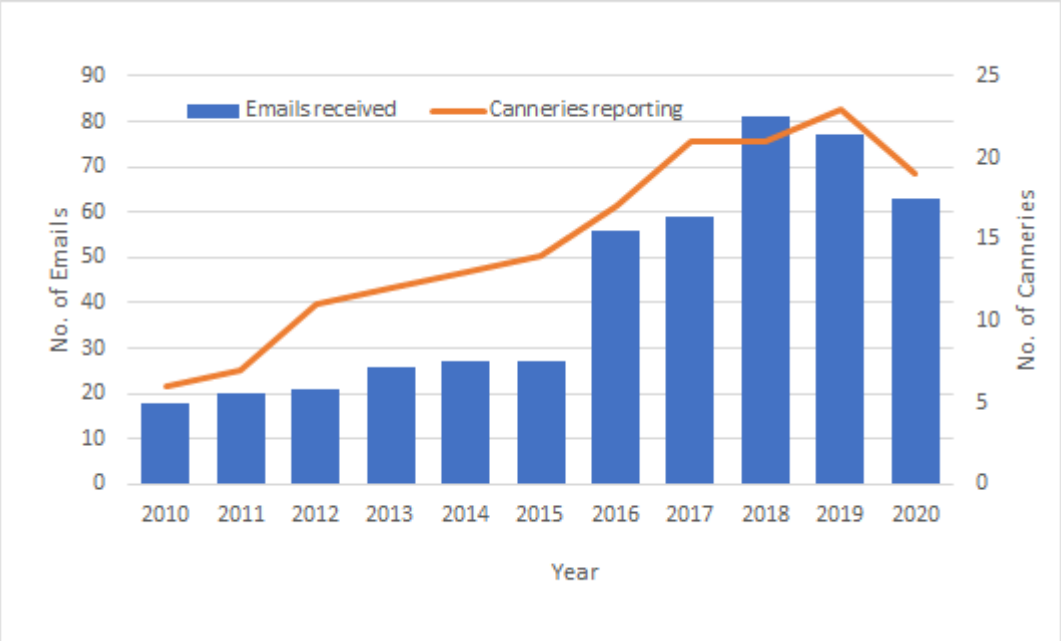
Appendix II: Data reporting requirement for ISSF participatory canneries

Appendix III: Screenshots of the data clean-up tool and its main functionalities

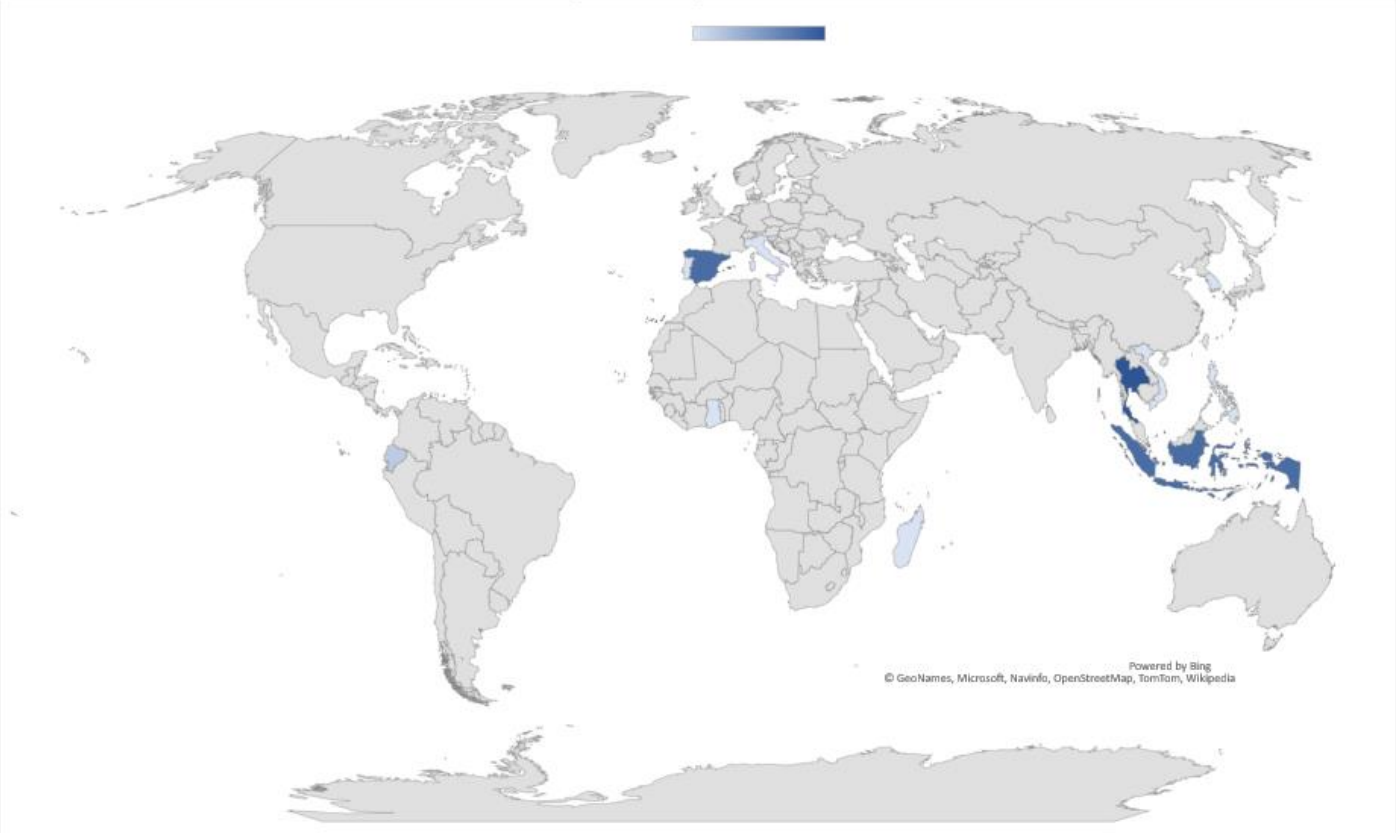
Appendix IV: Structure of the information extracted from ISSF-affiliated canneries data

Appendix V: Examples of data submissions

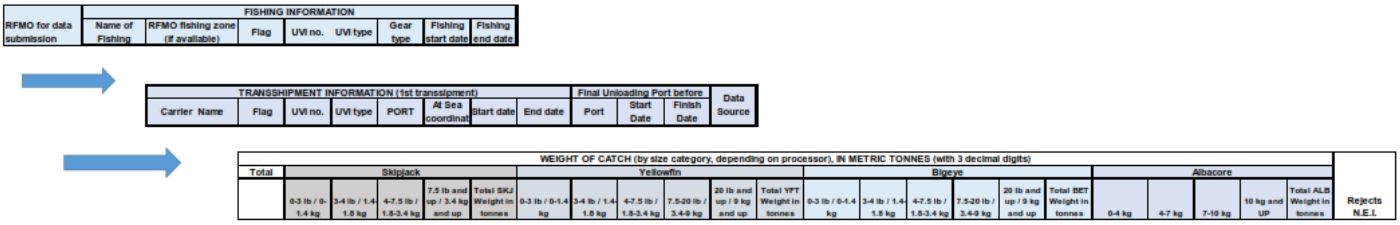
Appendix Ia: Submissions of data to IOTC per year



Appendix Ib: Number of canneries by location submitting data to IOTC

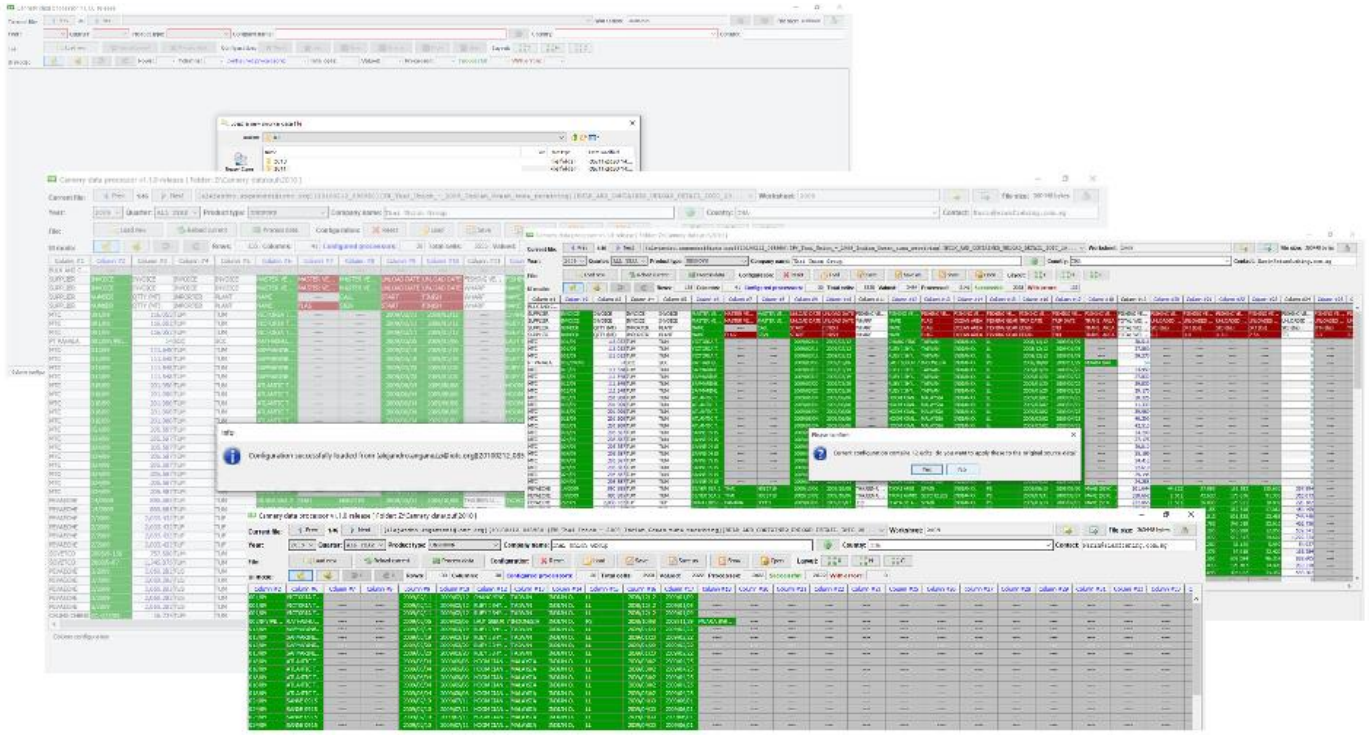


Appendix II: ISSF data reporting format (excel table . Split in three parts due to the size) and the instruction for filling up each field.

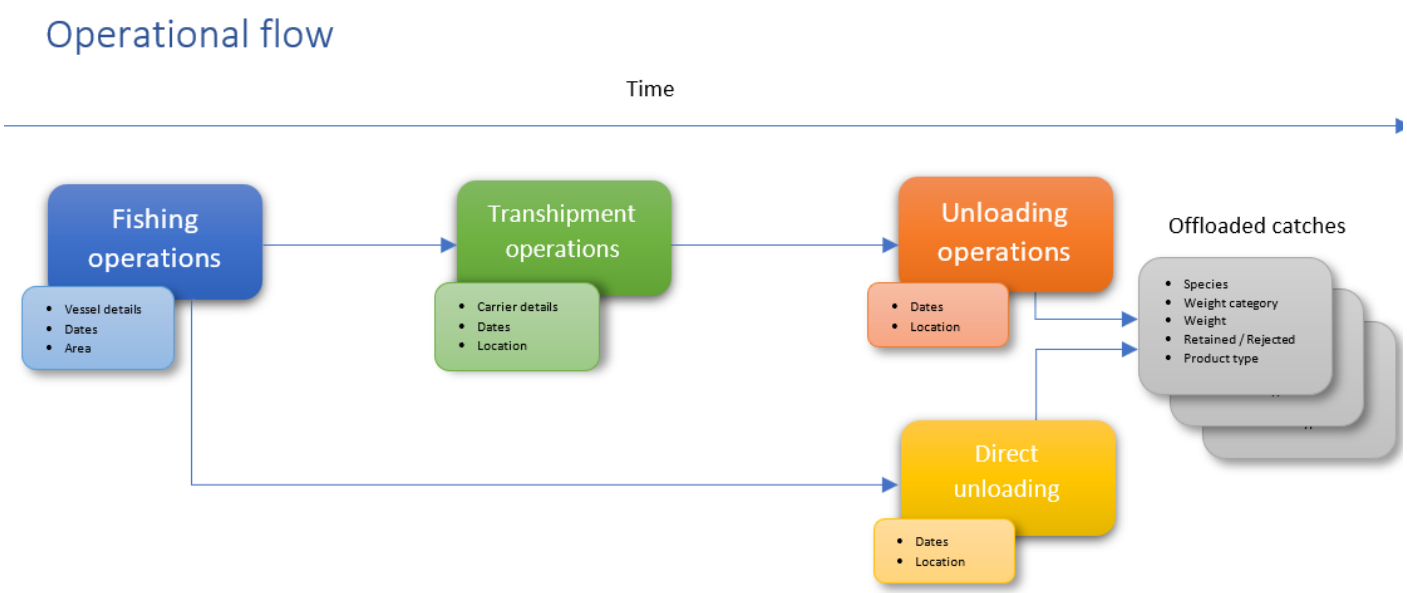


RFMO FOR	RFMO for which this data submission is intended: IATTC, ICCAT, IOTC, WCPFC
FISHING VESSEL	Enter the required information for the fishing vessel
Name of ve	Enter the name of the fishing vessel
fishing Zone:	RFMO the fishing area where fishing trip was conducted, if available: Pacific, Pacific-N, Pacific-S, Pacific-WC, Pacific-E, Atlantic, Atlantic-N, Atlantic-S, Atlantic-E, Atlantic-W, Indian
UVI no:	Unique vessel identifier
UVI Type	Type of UVI (IMO number, TUVI number, ISSF UVI, or national registration number)
GEAR TYPE	Enter the fishing gear used by the fishing vessel (Purse seine, Pole and line, Troll, Longline, Handline, Pole and line / handline / troll)
FISHING TR	Enter the start and end dates of the fishing trip
TRANSSHIPMENT INFORMATION	If the catch was transshipped to a carrier vessel, enter the transshipment information (if several transshipments, enter the first one)
Carrier nam	Enter the name of the carrier/reefer vessel
UVI no:	Unique vessel identifier
UVI Type	Type of UVI (IMO number, TUVI number, ISSF UVI)
PORT	If the transshipment took place in port, enter the name of the port and the country
AT SEA:	If the transshipment was at sea, enter the coordinates (Latitude, Longitude to the minute. Example: 32° 18' N, 122° 36' W)
START, END	Enter the start and end dates of the transshipment
FINAL UNLO	Enter the port where the catch was last unloaded for processing and start and end dates of catch unloading
DATA SOUR	Indicate if the catch corresponds to unloading data, outturn report or immediate pre-processing
WEIGHT OF CATCH	Enter the total weight of catch, in tons (with three decimal digits)
Total weigh	Enter the total weight of catch, in tons (with three decimal digits)
SKIPJACK	Enter the amount of skipjack for each commercial grading used by the processor (one column per commercial grading category)
	Suggested minimum breakdowns for skipjack: <3 lb. (1.4 Kg); 3-4 lb. (1.4 -1.8 Kg); 4-7.5 lb.; >7.5 lb. (3.4 Kg)
YELLOWFIN	Enter the amount of yellowfin for each commercial grading used by the processor (one column per commercial grading category)
	Suggested minimum breakdowns: <4 lb. (1.8 Kg); 4-7.5 lb. (1.8-3.4 Kg); 7.5-20 lb. (3.4-9 Kg); > 20 lb. (9 Kg)
BIGEYE	Enter the amount of bigeye for each commercial grading used by the processor (one column per commercial grading category)
	Suggested minimum breakdowns: <4 lb. (1.8 Kg); 4-7.5 lb. (1.8-3.4 Kg); 7.5-20 lb. (3.4-9 Kg); > 20 lb. (9 Kg)
ALBACORE	Enter the amount of bigeye for each commercial grading used by the processor (one column per commercial grading category)
	Suggested minimum breakdowns: <4 Kg; 4-7 Kg; 7-10 Kg; > 10 Kg
REJECTS N.I	Enter the weight of rejected tunas that are not included elsewhere under skipjack, yellowfin, bigeye or albacore.

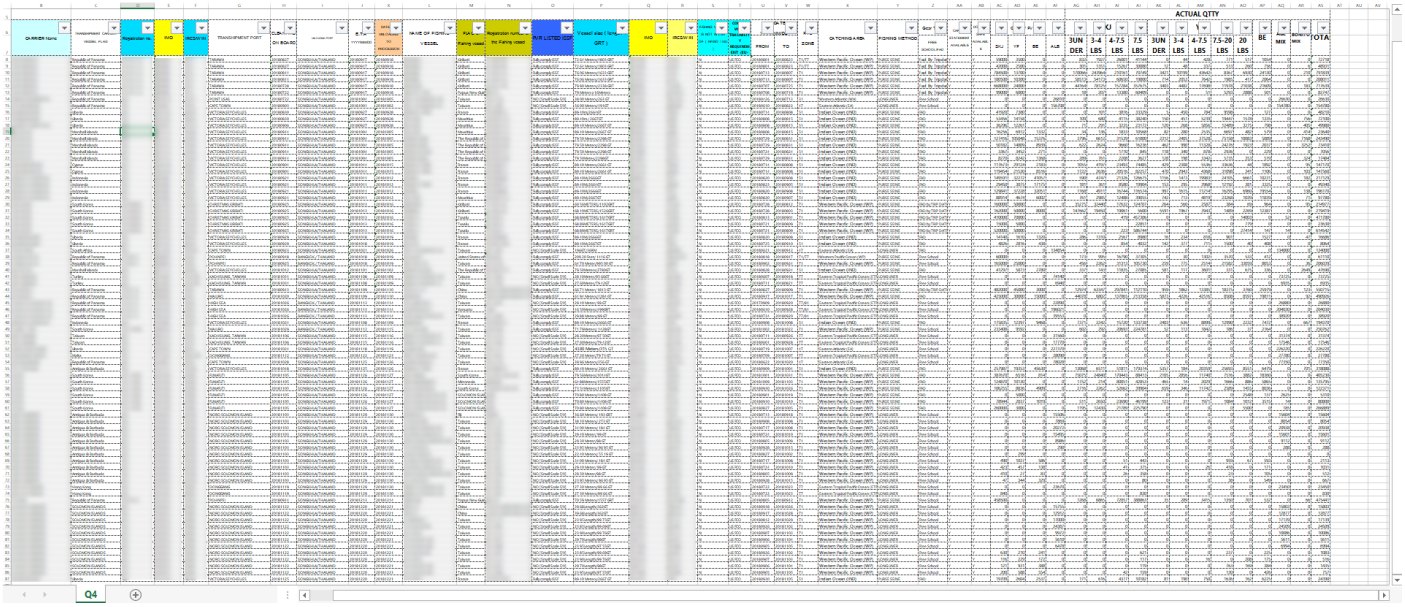
Appendix III: Screenshots of the database tool used to clean the data submitted by canneries. There are different steps in the process to clean-up the data. while uploading the data there are different validation questions to ensure the data are processed accordingly1



Appendix IV: Structure of the information extracted from the cannery data submitted to IOTC



Appendix V: Examples of data submissions by ISSF-participatory canneries



BE: big-eye YF: yellowfin SK: skipjack BN: Bonito

FISHING VESSELS - FISHING TRIPS AND CAPTURES DURING THIS PERIOD — **2018 - Q1**

NAME OF FISHING VESSEL	CALL SIGN	GEAR TYPE USED TO CAPTURE FISH	FLAG STATE	START DATE FOR UNLOADING PROCESSOR	END DATE FOR UNLOADING PROCESSOR	PORT OF UNLOADING PROCESSOR	FISHING AREA FROM WHICH THE UNLOADED CATCH WAS TAKEN	FAO ZONE	ORGANISMO REGULADOR	DATE RANGE OF OPERATIONS OF CATCHER VESSEL	DATE RANGE OF OPERATIONS OF CATCHER VESSEL FOR TRANSSHIPPED CATCH	OUT TURN OR BILL OF LADING, WEIGHT OF CATCH BY COMMERCIAL SPECIES BY CATCHER VESSEL	OUT TURN OR BILL OF LADING, WEIGHT OF CATCH BY SIZE CATEGORIES BY CATCHER VESSEL	MT	SOURCE OF DATA	OMI NUMBER
[redacted]	[redacted]	RED DE CERCO	SEYCHELLES	23-Dec-17	23-Dec-17	PORT VICTORIA, SEYCHELLES	OCEANO INDICO	51	IOTC	01/11/2017 22/11/2017	N/A	BN	BN +5		CATCH CERTIFICATE	9202704
													BN -5			
												BE	BE +10	1.266		
													BE -10	65.885		
												YF	YF +10	7.508		
													YF -10	197.655		
												SK	SK +3.4			
													SK -3.4			
[redacted]	[redacted]	RED DE CERCO	SEYCHELLES	28-Dec-17	28-Dec-17	PORT VICTORIA, SEYCHELLES	OCEANO INDICO	51	IOTC	28/10/2017 26/11/2017	N/A	BN	BN +5		CATCH CERTIFICATE	9663166
													BN -5			
												BE	BE +10			
													BE -10	5.160		
												YF	YF +10	33.695		
													YF -10	96.305		
												SK	SK +3.4			
													SK -3.4			
[redacted]	[redacted]	RED DE CERCO	ESPAÑA	21-Oct-17	27-Oct-17	PORT VICTORIA, SEYCHELLES	OCEANO INDICO	51	IOTC	26/09/2017 21/10/2017	N/A	BN	BN +5		CATCH CERTIFICATE	9130779
													BN -5			
												BE	BE +10			
													BE -10	185.700		
												YF	YF +10	227.900		
													YF -10			
												SK	SK +3.4			
													SK -3.4	837.100		
[redacted]	[redacted]	RED DE CERCO	ESPAÑA	30-Jun-17	01-Jul-17	PORT VICTORIA, SEYCHELLES	OCEANO INDICO	51	IOTC	18/05/2017 29/06/2017	N/A	BN	BN +5		CATCH CERTIFICATE	9292785
													BN -5			
												BE	BE +10	20.350		
													BE -10			
												YF	YF +10	6.700		
													YF -10			
												SK	SK +3.4			

RFMO - IOTC DATA 2018 Q1

TUNA PURCHASES JANUARY - MARCH 2017

OCEAN: INDIAN OCEAN

PRODUCT: WHOLE ROUND TUNA

	SPECIES	QUANTITY (Mt)	FISHING VESSEL	CALL SIGN	IMO	FISHING METHOD	FLAG	FISHING DATES			TRANSHIPMENT						UNLOADING	
								BEG.	FIN.	FAO	DATE	PORT	CARRIER	IMO	CALL SIGN	FLAG	BEG.	PORT
	YF+10KG	199	[redacted]	[redacted]	[redacted]	PURSE SEINE	SPAIN	23-11-16	17-01-17		17-01-17		[redacted]	[redacted]	[redacted]	MALTA		
		53						24-11-16	14-01-17		14-01-17							
		5					FRANCE	17-09-16	18-10-16	51	19-10-16	PORT VICTORIA				BAHAMAS	01-03-17	BOIRO
		132						21-01-17	15-02-17		16-02-17					LIBERIA		
0		111					SEYCHELLES	06-01-17	24-01-17		24-01-17							
1	YF+10KG	99	[redacted]	[redacted]	[redacted]	PURSE SEINE	KOREA	22-01-17	28-02-17	51	01-03-17	PORT VICTORIA	[redacted]	[redacted]	[redacted]	LIBERIA	18-03-17	BOIRO
2	YF+10KG	120	[redacted]	[redacted]	[redacted]	PURSE SEINE	KOREA	22-01-17	28-02-17	51	01-03-17	PORT VICTORIA	[redacted]	[redacted]	[redacted]	MALTA	12-03-17	BOIRO
3	YF+10KG	199	[redacted]	[redacted]	[redacted]	PURSE SEINE	KOREA	22-01-17	28-02-17	51	01-03-17	PORT VICTORIA	[redacted]	[redacted]	[redacted]	MALTA	12-03-17	BOIRO
4	YF+10KG	25	[redacted]	[redacted]	[redacted]	PURSE SEINE	KOREA	22-01-17	28-02-17	51	01-03-17	PORT VICTORIA	[redacted]	[redacted]	[redacted]	LIBERIA	28-03-17	BOIRO
5																		

CY17 [OCTOBER 2017 TO DECEMBER 2017]
UNLOADING DIRECTLY FROM FISHING VESSEL

Mon	Name of fishing vessel	nat	Trip No Yr	Gear used capture fi	RFMO	Flag sta	Start date for unloading process	End date for unloading process	Final unloading port	No Days Unloaded	Fishing area for catch	operation of catcher vessel for processi [transhipped]	weight in Kg of catch by commercial species & by catcher vessel [net] - PURCHASES															
Nov	[redacted]	2857	21702	Purse Seiner	IOTC	SEYCHELLES	01-Nov-17	02-Nov-17	Victoria	2	Indian Ocean	25.09.17-30.10.17	9,162	607	21	91	14,084	928	38	147	36	26	13	-	-	101,702	-	126,855
Nov	[redacted]	2858	21703	Purse Seiner	IOTC	SPAIN	06-Nov-17	06-Nov-17	Victoria	1	Indian Ocean	21.10.17-05.11.17	35,516	12,232	790	561	74	46	-	26	68	76	-	9	-	-	-	49,398
Nov	[redacted]	2859	21712	Purse Seiner	IOTC	MAURITIUS	06-Nov-17	07-Nov-17	Victoria	2	Indian Ocean	16.10.17-29.10.17	71,674	40,998	1,712	3,753	15,126	12,596	734	4,445	1,451	8,065	57	1,226	-	-	-	161,837
Nov	[redacted]	2860	21716	Purse Seiner	IOTC	MAURITIUS	07-Nov-17	10-Nov-17	Victoria	4	Indian Ocean	21.10.17-31.10.17	91,911	8,719	3,638	2,969	181,131	11,947	1,144	2,884	853	1,003	411	54	-	-	-	306,664
Nov	[redacted]	2861	21710	Purse Seiner	IOTC	FRANCE	07-Nov-17	07-Nov-17	Victoria	1	Indian Ocean	01.10.17-26.10.17	5,641	3,096	153	14	1,418	2,222	58	31	48	483	-	-	-	905	-	14,069
Nov	[redacted]	2862	21705	Purse Seiner	IOTC	SEYCHELLES	09-Nov-17	15-Nov-17	Victoria	6	Indian Ocean	16.10.17-09.11.17	186,157	63,609	5,469	12,250	345,410	49,980	4,172	8,188	15,975	13,641	832	1,328	1,204	764	-	708,979
Nov	[redacted]	2863	21708	Purse Seiner	IOTC	FRANCE	13-Nov-17	14-Nov-17	Victoria	2	Indian Ocean	23.10.17-11.11.17	-	-	-	-	-	-	-	-	-	-	-	-	-	45,533	-	45,533
Nov	[redacted]	2864	21710	Purse Seiner	IOTC	FRANCE	14-Nov-17	15-Nov-17	Victoria	2	Indian Ocean	30.09.17-10.11.17	9,054	11,726	247	2,348	4,371	1,457	-	1,210	548	1,228	259	-	-	19,575	-	52,023
Nov	[redacted]	2890	21709	Purse Seiner	IOTC	ITALY	18-Nov-17	24-Nov-17	Victoria	5	Indian Ocean	11.10.17-17.11.17	18,338	70,501	8,369	290	81,691	16,009	1,223	5,210	3,361	10,070	286	409	171	173,043	-	388,971
Dec	[redacted]	2765	21709	Purse Seiner	IOTC	MAURITIUS	02-Feb-17	02-Feb-17	Victoria	1	Indian Ocean	06.07.17-24.07.17	-	-	-	-	-	-	-	-	-	-	-	-	114	-	-	114
Dec	[redacted]	2767	21710	Purse Seiner	IOTC	MAURITIUS	06-Dec-17	06-Dec-17	Victoria	1	Indian Ocean	06.07.17-24.07.17	-	-	-	-	-	-	-	-	-	-	-	-	-	761	-	761
Dec	[redacted]	2777	21704	Purse Seiner	IOTC	FRANCE	14-Dec-17	14-Dec-17	Victoria	1	Indian Ocean	10.08.17-11.08.17	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59
Dec	[redacted]	2790	21706	Purse Seiner	IOTC	SEYCHELLES	11-Dec-17	11-Dec-17	Victoria	1	Indian Ocean	05.08.17-24.08.17	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54
Dec	[redacted]	2794	21710	Purse Seiner	IOTC	FRANCE	09-Dec-17	09-Dec-17	Victoria	1	Indian Ocean	08.08.17-29.08.17	875	-	-	-	-	-	-	-	-	-	-	-	-	-	-	875
Dec	[redacted]	2800	21713	Purse Seiner	IOTC	MAURITIUS	01-Dec-17	01-Dec-17	Victoria	1	Indian Ocean	25.08.17-10.09.17	2,928	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,928
Dec	[redacted]	2805	21706	Purse Seiner	IOTC	SEYCHELLES	15-Dec-17	15-Dec-17	Victoria	1	Indian Ocean	18.08.17-10.09.17	6,155	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,155
Dec	[redacted]	2925	21713	Purse Seiner	IOTC	MAURITIUS	15-Dec-17	15-Dec-17	Victoria	1	Indian Ocean	04.11.17-07.12.17	-	-	-	-	-	-	-	-	-	-	-	-	-	12,480	-	12,480
Dec	[redacted]	2926	21717	Purse Seiner	IOTC	MAURITIUS	15-Dec-17	18-Dec-17	Victoria	2	Indian Ocean	29.11.17-10.12.17	-	-	-	-	2,606	-	-	-	214	-	-	-	10,104	55,253	-	68,177
Dec	[redacted]	2822	21710	Purse Seiner	IOTC	SPAIN	09-Dec-17	09-Dec-17	Victoria	1	Indian Ocean	10.08.17-26.09.17	154	-	-	-	-	-	-	-	-	-	-	-	-	-	-	154

Vessels

BULK AND CONTAINER UNLOAD DETAIL (2011) FOR ISSF

	SUPPLIER	INVOICE				MASTER VESSEL			UNLOAD DATE									TR
		NUMBER	QTTY (MT)	IMPORTER	PLANT	NAME	FLAG	CALL SIGN	START	FINISH	WHARF	HATCH	NAME	FLAG	IMO NO.	OCEAN AREA	FISHING GEAR	BEGIN
7	[redacted]	[redacted]	22.500	TUM	TUM	[redacted]	-	[redacted]	4-Jun-11	4-Jun-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	3-Apr-1
8	[redacted]	[redacted]	22.500	TUM	TUM	[redacted]	-	[redacted]	4-Jun-11	4-Jun-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	3-Apr-1
9	[redacted]	[redacted]	22.500	TUM	TUM	[redacted]	-	[redacted]	4-Jun-11	4-Jun-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	3-Apr-1
10	[redacted]	[redacted]	22.500	TUM	TUM	[redacted]	-	[redacted]	4-Jun-11	4-Jun-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	3-Apr-1
11	[redacted]	[redacted]	22.500	TUM	TUM	[redacted]	-	[redacted]	4-Jun-11	4-Jun-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	3-Apr-1
12	[redacted]	[redacted]	22.500	TUM	TUM	[redacted]	-	[redacted]	23-Jun-11	23-Jun-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	9-Oct-1
13	[redacted]	[redacted]	24.740	TUM	TUM	[redacted]	-	[redacted]	5-Jul-11	5-Jul-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	4-Feb-1
14	[redacted]	[redacted]	24.740	TUM	TUM	[redacted]	-	[redacted]	5-Jul-11	5-Jul-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	5-Feb-1
15	[redacted]	[redacted]	24.740	TUM	TUM	[redacted]	-	[redacted]	5-Jul-11	5-Jul-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	3-Mar-1
16	[redacted]	[redacted]	25.000	TUM	TUM	[redacted]	-	[redacted]	12-Jul-11	12-Jul-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	MAY 20
17	[redacted]	[redacted]	25.000	TUM	TUM	[redacted]	-	[redacted]	12-Jul-11	12-Jul-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	MAY 20
18	[redacted]	[redacted]	25.000	TUM	TUM	[redacted]	-	[redacted]	12-Jul-11	12-Jul-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	MAY 20
19	[redacted]	[redacted]	25.000	TUM	TUM	[redacted]	-	[redacted]	12-Jul-11	12-Jul-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	MAY 20
20	[redacted]	[redacted]	26.820	TUM	TUM	[redacted]	-	[redacted]	12-Jul-11	12-Jul-11	LKB	-	[redacted]	TAIWAN	-	INDIAN OCEAN	LL	1-Apr-1
21	[redacted]	[redacted]	25.200	TUM	TUM	[redacted]	-	[redacted]	30-Jul-11	30-Jul-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	8-Mar-1
22	[redacted]	[redacted]	25.200	TUM	TUM	[redacted]	-	[redacted]	30-Jul-11	30-Jul-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	8-Feb-1
23	[redacted]	[redacted]	25.200	TUM	TUM	[redacted]	-	[redacted]	30-Jul-11	30-Jul-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	23-Jan-
24	[redacted]	[redacted]	25.200	TUM	TUM	[redacted]	-	[redacted]	30-Jul-11	30-Jul-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	16-Feb-
25	[redacted]	[redacted]	25.000	TUF	TUF	[redacted]	-	[redacted]	9-Aug-11	9-Aug-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	JUNE
26	[redacted]	[redacted]	25.000	TUF	TUF	[redacted]	-	[redacted]	9-Aug-11	9-Aug-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	JUNE
27	[redacted]	[redacted]	25.000	TUF	TUF	[redacted]	-	[redacted]	9-Aug-11	9-Aug-11	LKB	-	[redacted]	NDONESIA	-	INDIAN OCEAN	PS	JUNE
28	[redacted]	[redacted]	56.540	TUF	TUF	[redacted]	-	[redacted]	17-Aug-11	18-Aug-11	LKB	-	[redacted]	TAIWAN	-	INDIAN OCEAN	LL	23-May-
29	[redacted]	[redacted]	56.540	TUF	TUF	[redacted]	-	[redacted]	17-Aug-11	18-Aug-11	LKB	-	[redacted]	TAIWAN	-	INDIAN OCEAN	LL	26-Apr-
30	[redacted]	[redacted]	56.540	TUF	TUF	[redacted]	-	[redacted]	17-Aug-11	18-Aug-11	LKB	-	[redacted]	TAIWAN	-	INDIAN OCEAN	LL	25-Apr-
31	[redacted]	[redacted]	56.540	TUF	TUF	[redacted]	-	[redacted]	17-Aug-11	18-Aug-11	LKB	-	[redacted]	TAIWAN	-	INDIAN OCEAN	LL	16-May-
32	[redacted]	[redacted]	56.540	TUF	TUF	[redacted]	-	[redacted]	17-Aug-11	18-Aug-11	LKB	-	[redacted]	TAIWAN	-	INDIAN OCEAN	LL	12-May-
33	[redacted]	[redacted]	936.971	TUM	TUM	[redacted]	THAI	[redacted]	25-Aug-11	27-Aug-11	THAJEEN UNION PORT	2A,1A,1B,3B,2B	[redacted]	MALDIVIAN	-	INDIAN OCEAN	PL	1-May-
34	[redacted]	[redacted]	936.971	TUM	TUM	[redacted]	THAI	[redacted]	25-Aug-11	27-Aug-11	THAJEEN UNION PORT	2A,1A,1B,3B,2B	[redacted]	MALDIVIAN	-	INDIAN OCEAN	PL	1-May-
35	[redacted]	[redacted]	936.971	TUM	TUM	[redacted]	THAI	[redacted]	25-Aug-11	27-Aug-11	THAJEEN UNION PORT	2A,1A,1B,3B,2B	[redacted]	MALDIVIAN	-	INDIAN OCEAN	PL	1-May-
36	[redacted]	[redacted]	936.971	TUM	TUM	[redacted]	THAI	[redacted]	25-Aug-11	27-Aug-11	THAJEEN UNION PORT	2A,1A,1B,3B,2B	[redacted]	MALDIVIAN	-	INDIAN OCEAN	PL	1-May-
37	[redacted]	[redacted]	936.971	TUM	TUM	[redacted]	THAI	[redacted]	25-Aug-11	27-Aug-11	THAJEEN UNION PORT	2A,1A,1B,3B,2B	[redacted]	MALDIVIAN	-	INDIAN OCEAN	PL	1-May-
38	[redacted]	[redacted]	936.971	TUM	TUM	[redacted]	THAI	[redacted]	25-Aug-11	27-Aug-11	THAJEEN UNION PORT	2A,1A,1B,3B,2B	[redacted]	MALDIVIAN	-	INDIAN OCEAN	PL	1-May-
39	[redacted]	[redacted]	936.971	TUM	TUM	[redacted]	THAI	[redacted]	25-Aug-11	27-Aug-11	THAJEEN UNION PORT	2A,1A,1B,3B,2B	[redacted]	MALDIVIAN	-	INDIAN OCEAN	PL	1-May-
40	[redacted]	[redacted]	936.971	TUM	TUM	[redacted]	THAI	[redacted]	25-Aug-11	27-Aug-11	THAJEEN UNION PORT	2A,1A,1B,3B,2B	[redacted]	MALDIVIAN	-	INDIAN OCEAN	PL	1-May-
41	[redacted]	[redacted]	936.971	TUM	TUM	[redacted]	THAI	[redacted]	25-Aug-11	27-Aug-11	THAJEEN UNION PORT	2A,1A,1B,3B,2B	[redacted]	MALDIVIAN	-	INDIAN OCEAN	PL	1-May-
42	[redacted]	[redacted]	936.971	TUM	TUM	[redacted]	THAI	[redacted]	25-Aug-11	27-Aug-11	THAJEEN UNION PORT	2A,1A,1B,3B,2B	[redacted]	MALDIVIAN	-	INDIAN OCEAN	PL	1-May-
43	[redacted]	[redacted]	936.971	TUM	TUM	[redacted]	THAI	[redacted]	25-Aug-11	27-Aug-11	THAJEEN UNION PORT	2A,1A,1B,3B,2B	[redacted]	MALDIVIAN	-	INDIAN OCEAN	PL	1-May-
44	[redacted]	[redacted]	936.971	TUM	TUM	[redacted]	THAI	[redacted]	25-Aug-11	27-Aug-11	THAJEEN UNION PORT	2A,1A,1B,3B,2B	[redacted]	MALDIVIAN	-	INDIAN OCEAN	PL	1-May-
45	[redacted]	[redacted]	936.971	TUM	TUM	[redacted]	THAI	[redacted]	25-Aug-11	27-Aug-11	THAJEEN UNION PORT	2A,1A,1B,3B,2B	[redacted]	MALDIVIAN	-	INDIAN OCEAN	PL	1-May-

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