

**Indonesian Scientific Observer Program  
Activities For Indian Ocean In 2015 And 2016**

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**Summary**

This paper presents a progress summary of the Indonesian scientific observer program on the tuna fishing vessels operating in the Indian Ocean. The observer data is the most detailed information not only associated with catch and effort, but also information on fishing practices, gear configuration and environmental conditions. Only low fleet coverages were available from this data set. Hence this could lower the possibility to get robust abundance indices from the fishery.

**Indonesian observer program in the Indian Ocean**

There are two Indonesian observer programs currently operating in the Indian Ocean, namely national observer program and scientific observer program. The national observer program has been formally legalized by the MMAF since 2013 through Ministerial Decree No. 1/2013. Catch and effort data have been collected through the national observer program, however, issues on data entry and validity as well as the need for verification and validation prior analysis is remained (Irianto et al. 2016). The need to improve the capacity of the observers and related officers were highlighted (Irianto et al. 2016).

The scientific observer program has initiated since 2005 through a collaboration between RCCF-MMAF (Indonesia) and CSIRO (Australia) funded by ACIAR on a trial observer program. This program was then continued and funded by the Indonesian Government through the RCCF between 2009 and 2011. The Research Institute for Tuna Fisheries (under RCCF) was

established in 2011 in order to conduct researches on tuna fisheries in the Indian Ocean including continuing the scientific observer program. The trial observer program (2005-2008) has been reported in the 13<sup>th</sup> Meeting of the Extended Scientific Committee in 2008, while the scientific observer data have been reported within the Indonesian National Report Scientific Meetings of the IOTC and CCSBT since 2010. This information paper provides an update of the Indonesian scientific observer program activities in the Indian Ocean in 2016.

### **Design of the scientific observer program**

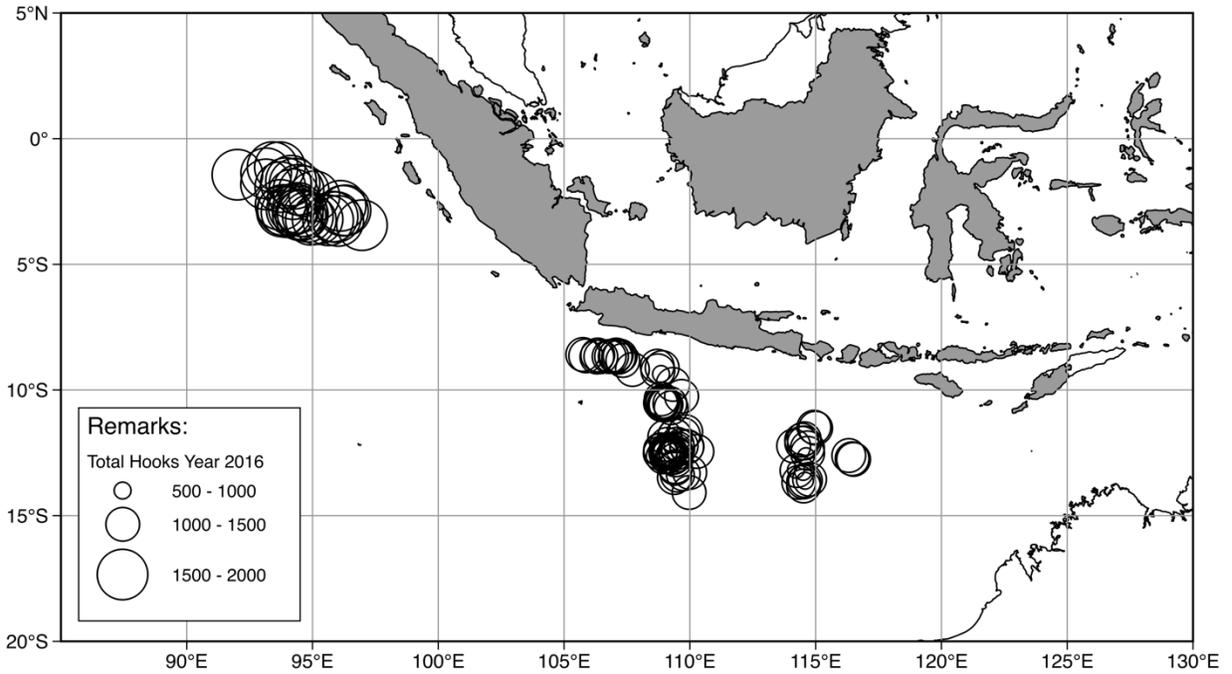
There are 8 trained scientific observers at the RITF. The observers were not only deployed in the longline vessels operating out of Benoa, but also Muara Baru and Cilacap. In 2016, there were three scientific observers trips in total, with the days at sea ranged between 32 and 86 days, and the number of sets ranged between 22 and 73 sets. The observer coverages were 2.59% in terms of total active vessels. Geographically, the capacity of scientific observer covered the fishing ground of statistical area 1.

Table 1. Observer activities in authorized Fishing Vessels in 2016 (source: Indonesian National Report for the CCSBT SC meeting)

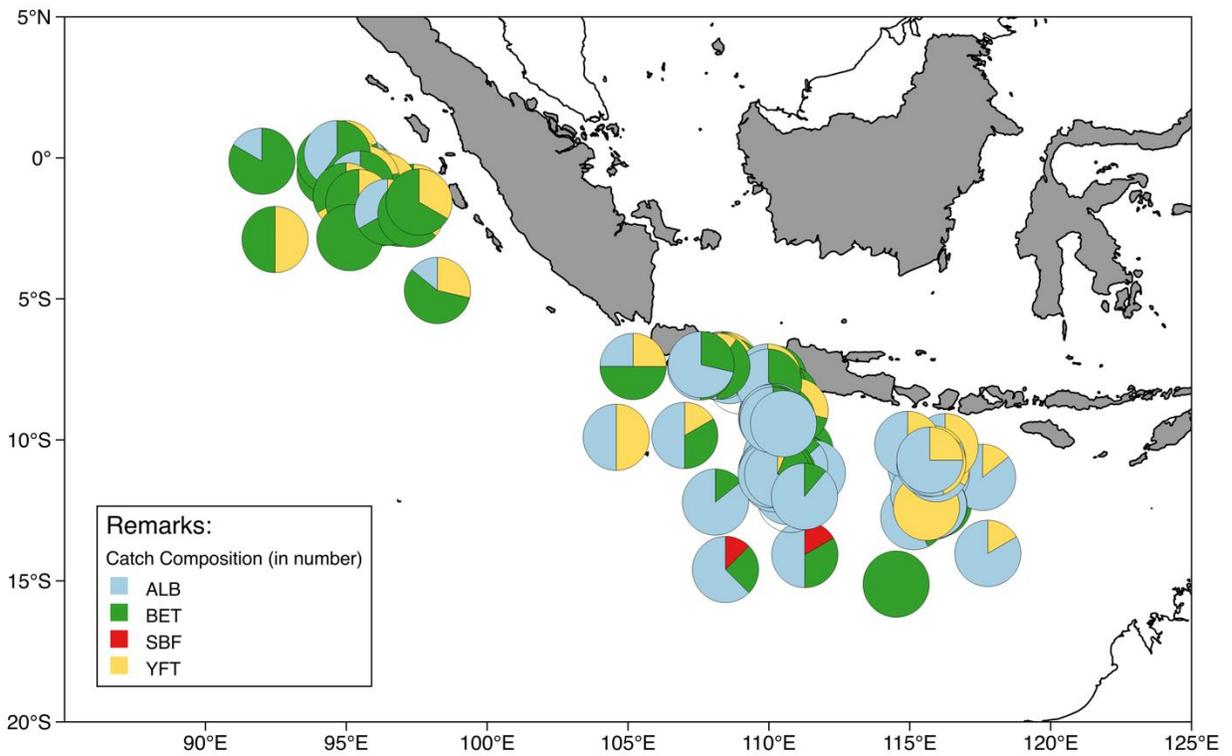
Trip	Base	Date	DAS	No of Settings	No of Hooks	No of SBT	HR (x10 <sup>3</sup> )	CCSBT Statistical Area
1	Muara Baru	1/5/16	52	35	57,750	0	0.000	1
2	Cilacap	2/18/16	86	73	94,468	4	0.042	1
3	Benoa	7/23/16	32	22	23,650	0	0.000	1

### **Spatial distribution of the observed sets and tuna catch composition**

The observed tuna longline sets covered the area between 0°-15° S and 90°-120° E and concentrated in the area between 8°-15° S and 105°-118° E, indicating the highest number of sets observed (Figure 1). Southern bluefin tunas were caught in several set within spawning ground area in region 1 CCSBT statistical area (Figure 2)



**Figure 1. Map of the distribution of Indonesian tuna longline efforts year 2016, acquired from scientific observer data.**



**Figure 2. Spatial distribution of tuna catch composition in 2016, acquired from scientific observer data.**

## Trends of catch and effort recorded by the observers

Over the last five years, the effort observed by the scientific observers are declining. Mainly because technical issues related to some implementation on onboard observer's regulations recently. In 2016, only 3 trips were deployed (Table 2). Observed catch and effort from scientific observer data shown the hook rates for most tuna species were declining in the last 5 years (Figure 3.). In order to get a robust catch and effort data, Indonesia is currently improving the quality and quantity of logbook data.

Table 2. Estimated hook-rates of SBT on authorized fishing vessels

SBT					
Trip	n	HR	Length (cmTL)		
			Average	Min	Max
1	0	0.000	0	0	0
2	4	0.042	177.5	172.0	180.0
3	0	0.000	0	0	0

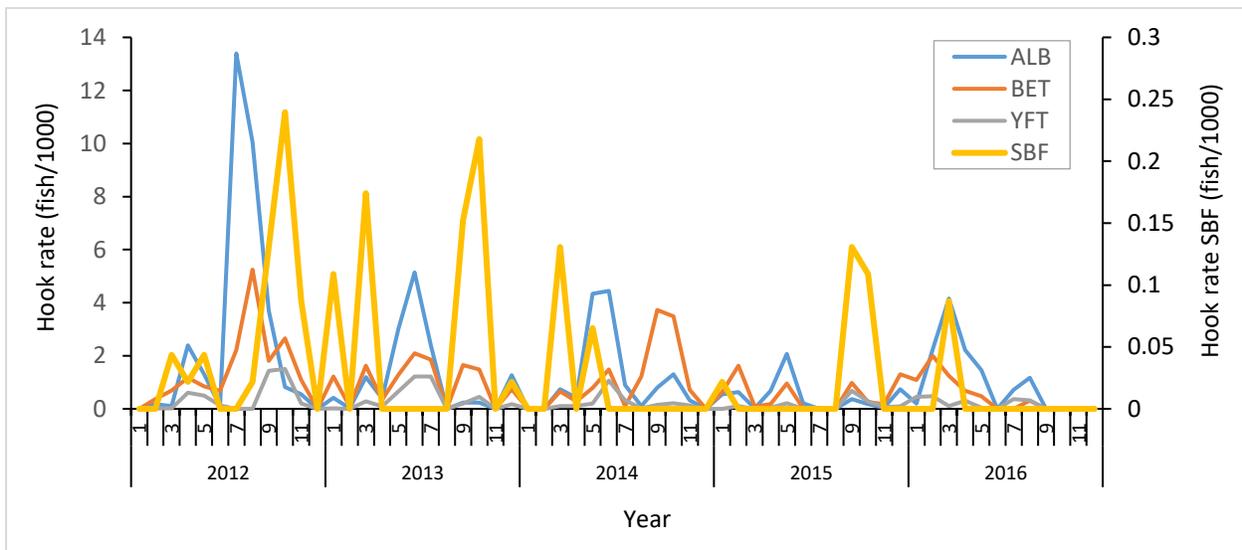


Figure 3. Monthly catch and effort (hooks) of LL catch in 2016

## Challenges

Main challenges to improve the use of the scientific observer data are related to the following issues: low spatial and temporal coverages (region), low fleet coverage (gear types) and no replication for each observed vessel.

Appendix 1. Annual activities of scientific observer based in Benoa Bali from 2005 to 2016

Year	No. of Obs	No. of Trips	No. of Company	Total Day at Sea	Days/Trip	Avg (d/trip)
2005	6	6	1	251	19-22	20
2006	6	19	5	758	7-99	39
2007	6	14	5	648	21-108	34
2008	5	15	7	481	23-66	30
2009	5	14	8	535	15-59	38
2010	5	8	4	240	40-50	50
2011	5	6	3	210	30-50	40
2012	6	7	5	496	33-208	83
2013	5	3	3	170	52-60	57
2014	8	6	4	371	29-90	62
2015	4	5	5	241	31-61	48
2016	3	3	3	170	32-86	57

**Appendix 2.** Observed catch and effort data of ecologically related species (ERS) from scientific observer program in 2016.

Trip	Total Hooks	BAR	BSH	BTS	CCB	CDF	CSK	DAV	HAR	LEC	LKV	MON
1	57,750	0.069	0.312	-	-	-	-	1.004	-	1.524	0.052	0.069
2	94,468	0.021	0.900	-	0.011	0.106	1.355	1.662	0.466	1.789	-	0.593
3	23,650	-	0.085	0.042	0.085	0.127	1.945	2.410	0.085	4.059	0.507	-
Trip	Total Hooks	MOX	MSO	NGA	OCS	OIL	TCR	TSK	TSS	TST	WAH	
1	57,750	-	-	3.792	-	-	0.571	-	-	0.641	0.329	
2	94,468	-	0.053	4.255	0.032	0.064	0.307	-	0.021	0.815	0.328	
3	23,650	0.042	-	3.044	0.042	0.085	-	0.042	-	0.127	0.465	

**Appendix 3.** List of ecologically related species incidentally caught by Indonesia tuna longliners in the last 5 years (2012-2016)

<b>Code</b>	<b>Species</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
B1	seagull	0	0	1	0	0
B2	white albatross	0	0	0	0	0
B3	black albatross	9	0	0	7	0
BAR	Baracuda	11	0	4	5	6
BSH	Blue shark	381	37	63	137	105
BTS	Bigeye Thresher shark	0	1	0	0	1
BWL	Pomfret	1	194	232	121	0
CCB	Spinner shark	1	4	17	1	3
CCL	Common Blacktip Shark	0	0	0	1	0
CCP	Sandbar Shark	0	0	0	0	0
CDF	Common dolphinfish	25	11	15	7	13
CSK	Crocodile shark	157	48	90	108	174
DAV	Pelagic stingray	409	914	511	206	272
DKK	Leatherback turtle	0	0	0	0	0
DOL	Dolphin	0	0	0	0	0
EIL	Brilliant pomfret	16	5	0	0	0
FAL	Silky Shark	0	0	0	26	0
HAR	Long nose chimaeras	80	22	3	14	46
LEC	Escolar	1387	284	666	490	353
LKV	Olive ridley turtle	5	6	12	1	15
MON	Moon fish	971	51	29	30	60
MOX	Ocean Sunfish	9	11	3	2	1
MSK	Mako sharks (Lamnidae)	9	1	0	0	0
MSO	Mako sharks ( <i>Isurus oxyrinchus</i> )	2	2	2	1	5
MSP	Mako sharks ( <i>Isurus paucus</i> )	1	0	0	0	0
NGA	Lancet Fish	1156	1738	921	739	693
OCS	Oceanic whitetip shark	4	2	8	4	4
OHR	Other Hair tail fish	0	1	0	0	0
OIL	Oilfish	65	7	58	16	8
RME	Devil Ray	0	0	1	1	0
RMJ	Manta ray, Japanese devilray	0	1	1	0	0
SPL	Hammerhead sharks ( <i>Sphyrna lewini</i> )	0	0	0	1	0
SPY	Hammerhead sharks (Sphyrnidae)	2	1	0	0	0
SPZ	Hammerhead sharks ( <i>Sphyrna zygaena</i> )	0	0	0	0	0
SSD	Shortnose spurdog	0	0	0	0	0

SSH	Silky Shark	0	0	1	0	0
TCR	Pomfret	60	91	90	45	62
THR	Thresher sharks nei	0	0	0	0	0
TIG	Tiger shark	0	1	0	0	0
TRF	Tapper tail ribbon fish	35	3	1	0	0
TRT	Turtle	2	0	0	0	0
TSK	Thresher sharks (Alopiidae)	2	1	2	6	1
TSP	Thresher sharks ( <i>Alopias pelagicus</i> )	3	1	0	0	0
TSS	Thresher sharks ( <i>Alopias superciliosus</i> )	2	1	1	0	2
TST	Sickle pomfret	87	60	110	29	117
TTH	Hawksbill turtle	0	0	0	0	0
TTX	Marine turtles nei	0	0	0	0	0
TUG	Green turtle	0	0	0	0	0
WAH	wahoo	41	60	96	63	61