Indonesia National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2018

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INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

In accordance with IOTC Resolution 15/02, final scientific data for the previous year was provided to the IOTC Secretariat by 30 June of the current year, **for all fleets other than longline** [e.g. for a National Report submitted to the IOTC Secretariat in 2016, final data for the 2015 calendar year must be provided to the Secretariat by 30 June 2016)	YES 29/06/2018
In accordance with IOTC Resolution 15/02, provisional **longline data** for the previous year was provided to the IOTC Secretariat by 30 June of the current year [e.g. for a National Report submitted to the IOTC Secretariat in 2016, preliminary data for the 2015 calendar year was provided to the IOTC Secretariat by 30 June 2016). **REMINDER:** Final longline data for the previous year is due to the IOTC Secretariat by 30 Dec of the current year [e.g. for a National Report submitted to the IOTC Secretariat in 2016, final data for the 2015 calendar year must be provided to the Secretariat by 30 December 2016).	YES 29/06/2018
If no, please indicate the reason(s) and intended actions:	

Executive Summary

For fisheries management purpose, Indonesian waters are divided into eleven Fisheries Management Areas (FMA). Three of them located within the IOTC area of competence, namely FMA 572 (Western Sumatera and Sunda Strait), FMA 573 (South of Java to East Nusa Tenggara, Sawu Sea and western part of Timor Sea) and 571 (Malacca Strait and Andaman Sea). Indonesian fishers operated various fishing gears such as Long line, Purse seine, hand line to catch large pelagic fishes such as tuna, skipjack, marlins etc. Longline is the main fishing gear type targeting tunas which operated in those FMAs. Number of active vessel operated in high seas in 2017 was 247 vessel dominated by longline followed by purse seine. Total catch of main species of tunas in 2017 was estimated around 165,725 mt which composed of albacore (6,994 mt), bigeye tuna (21,945 mt), skipjack tuna (96,872 mt) and yellowfin tuna (39,913 mt). Nominal hook rate derived from logbook data 2017 for albacore, bigeye, and yellowfin in kg/1000 hooks were 69.13, 29.51, and 65.79 respectively. Observer coverage 2017 was 6.9% increase than previous year in term proportion number of vessel observed. Nominal hook rate for billfishes from longline fishery was decreased rather than previous years, dominated by swordfish, followed by black marlin and blue marlin. Interaction longline fishery with seabird were operated above 25S was occurred, also reported that marine turtle interaction decreased rather than from previous years. Meanwhile bycatch of shark still dominated by blue sharks and crocodile sharks.

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1. BACKGROUND/GENERAL FISHERY INFORMATION

Indonesia is an archipelagic nation located between the continents of Asia and Australia surrounded by two oceans, Pacific Ocean in the northern part and Indian Ocean in southern part. It consists of approximately 17,508 islands and coast line of 81,000 km. Totally, Indonesia has 5.8 million km2 of marine waters consisting of 3.1 million km2 of territorial waters (<12 miles) and 2.7 million km2 of EEZ (12-200 miles). For fisheries management purpose, Indonesian waters are divided into eleven Fisheries Management Areas (FMA). Three of them located within the IOTC area of competence, namely FMA 572 (Western Sumatera and Sunda Strait), FMA 573 (South of Java to East Nusa Tenggara, Sawu Sea and western part of Timor Sea) and 571 (Malacca Strait and Andaman Sea). are located within the IOTC area of competence (Figure 1a).

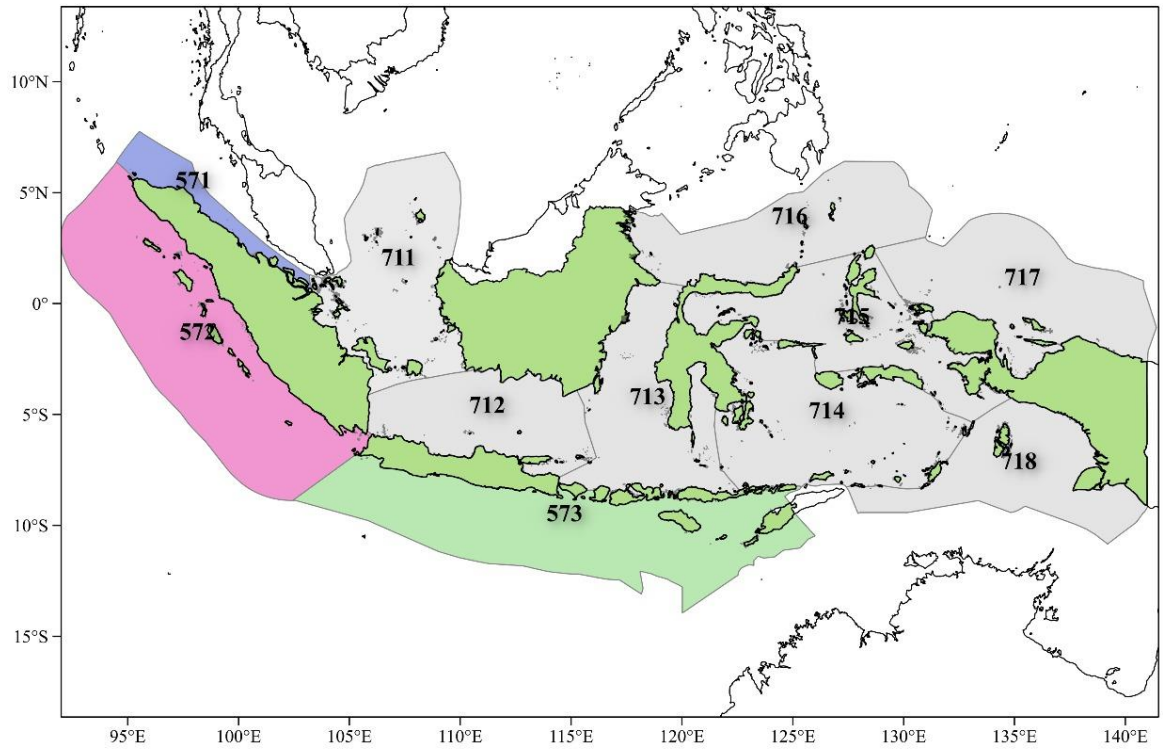


Figure 1a. Fisheries Management Area (FMA) of Indonesian Waters

Main landing sites for tuna and tuna-like species are widespread across the western of Sumatra, south of Java, Bali and Nusa Tenggara (Figure 1b). Area of western Sumatra (FMA 572) are dominated by purse seine fleets (Lampulo and Sibolga) and longline fleets (Bungus). While on the southern part of Java, Bali and Nusa Tenggara (FMA 573) are dominated by handline/troll line fleets (Pacitan, Prigi and Labuhan Lombok) and longline fleets (Palabuhanratu, Cilacap and Benoa). Benoa Port was main tuna landing port for vessel operated in Indian Ocean.

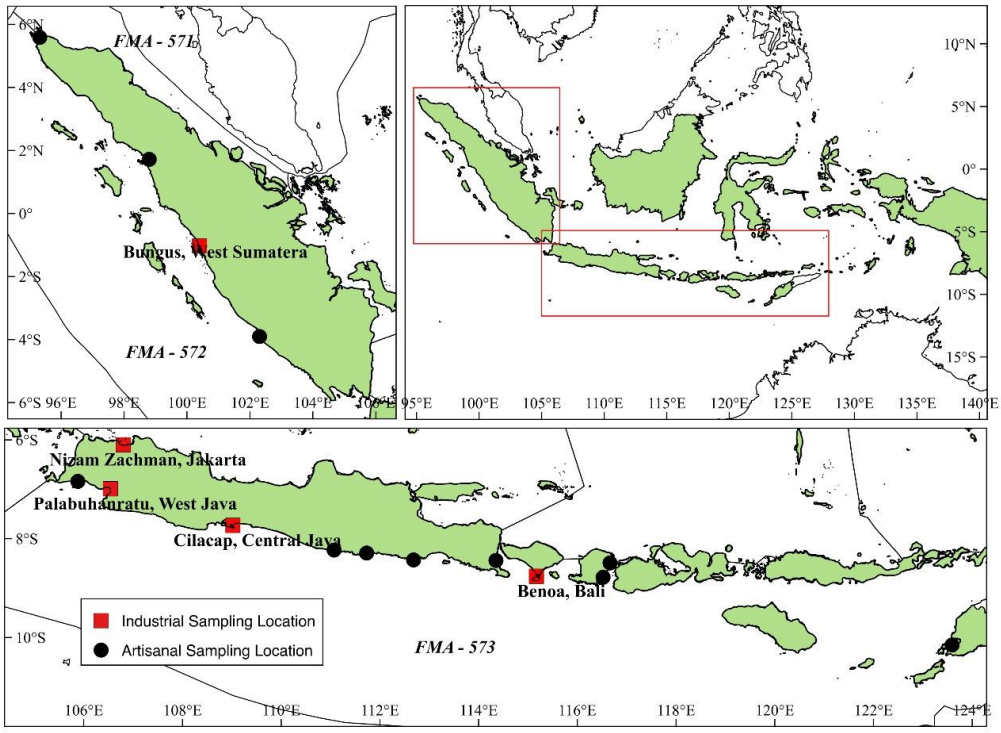


Figure 1b. Primary fishing port/landing sites the industrial (*blue label*) and artisanal (*red label*).

2. FLEET STRUCTURE

The number of active fishing vessels operated, based on their gross tonnage (GT) as per reported to IOTC on 6th of March, 2018 in the FMAs 572, 573 and high seas Indian Ocean is 247 fishing vessels, which consisted of longline (217), purse seine (30), drifting gillnet (0), and carrier/cargo freezer (0).

Table 1. Summary of active fishing vessels by size (GT) as per reported to IOTC on 6th of March, 2018 (Source: DGCF, 2018).

Size	Longline	Purse seine	Gillnet	Carrier/Cargo Freezer	Other	Total
<50	70	0	0	0	0	70
51-100	76	0	0	0	0	76
101-200	71	29	0	0	0	100
201-300	0	1	0	0	0	1
301-500	0	0	0	0	0	0
501-800	0	0	0	0	0	0
>800	0	0	0	0	0	0
Total	**217**	**30**	**0**	**0**	**0**	**247**

3. CATCH AND EFFORT (BY SPECIES AND GEAR)

Indonesian national statistic regularly reported the annual catch including four (4) main species such as albacore, bigeye tuna, skipjack tuna and , yellowfin tuna. However the annual catch for 2017 is still currently under finas validation process assisted by RFMOs expert. Official release expected to be issued before the end of the year. Total catch of main species of tunas in 2017 was 125,811 mt which composed of yellowfin tuna (39,913 mt); bigeye tuna (22,433 mt), skipjack tuna (60,066 mt) and albacore (6,994 mt). The average catch of tunas from 2013 to 2017 was estimated 116,735 mt . The proportion average catch was dominated by albacore (6.22%), followed by bigeye (22.39%) yellowfin (38.29%), skipjack (71.39%), and. Total catch 2017 was reported higher than previous year. Indonesia had been revised annual catch 2012-2016 and reported to Secretariat on March 23rd, 2018. However Indonesia did not received confirmation about this request. Therefore, discrepancy data between national report and IOTC data still occurred.

Table 2. Annual catch by gear and primary species of tuna (ALB, BET, SKJ and YFT) derived from Indian Ocean from 2013-2017.

Gear Type	Species	Year					Average (MT)
		2013	2014	2015	2016	2017	
Gillnet	ALB	-	-	965	20	-	**197**
	BET	430	341	938	729	1,120	**712**
	SKJ	4,394	3,434	7,652	12,892	6,023	**6,879**
	YFT	617	445	1,241	2,912	1,161	**1,275**
	Total	**5,441**	**4,220**	**10,796**	**16,553**	**8,303**	**9,063**
Line	ALB	3	9	1,179	860	566	**523**
	BET	6,533	5,175	1,908	2,872	2,938	**3,885**
	SKJ	32,161	25,131	19,474	16,964	24,594	**23,665**
	YFT	18,681	13,465	9,645	9,276	9,034	**12,020**
	Total	**57,378**	**43,780**	**32,206**	**29,972**	**37,132**	**40,094**
Longline	ALB	6,021	8,539	4,488	6,278	6,399	**6,345**
	BET	15,037	16,197	7,919	7,642	8,302	**11,019**
	SKJ	9,517	5,729	4,763	2,281	6,555	**5,769**
	YFT	16,325	12,645	10,549	10,404	10,527	**12,090**
	Total	**46,900**	**43,110**	**27,719**	**26,605**	**31,785**	**35,224**
Others	ALB	1	3	662	3	-	**134**
	BET	1,493	1,183	2,121	1,692	140	**1,326**
	SKJ	14,494	11,326	30,452	11,394	16,086	**16,750**
	YFT	5,528	3,985	10,773	3,107	7,593	**6,197**
	Total	**21,516**	**16,497**	**44,008**	**16,196**	**23,819**	**24,407**
Purse seine	ALB	70	199	7	18	29	**65**
	BET	12,012	9,516	5,779	9,199	9,445	**9,190**
	SKJ	33,871	26,468	18,597	28,828	43,614	**30,276**
	YFT	20,229	14,582	8,363	10,786	11,598	**13,112**
	Total	**66,182**	**50,765**	**32,746**	**48,831**	**64,686**	**52,642**

Grand Total	ALB	6,095	8,750	7,301	7,179	6,994	**7,264**
	BET	35,505	32,412	18,665	22,134	21,945	**26,132**
	SKJ	94,437	72,088	80,938	72,359	96,872	**83,339**
	YFT	61,380	45,122	40,571	36,485	39,913	**44,694**
	Total	**197,417**	**158,372**	**147,475**	**138,157**	**165,725**	**161,429**

Indonesia continued to improved data collection process by validating logbook data with other data sources such as port clearance documents, fishing permit and VMS data. Initial progress of this activity could derived catch and effort data from logbook. Summary of spatial and temporal of the catch and effort information derived from logbook data is presented in Annex 1.

The distribution of effort (hooks) from longline fleets in 2017 derived from logbook data was concentrated above 10ºS-15ºS and between 105ºE-120ºE. The range of effort used was between 396-2700 hooks/set with average 1250 hooks/set (Figure 2). Overall, the average number of hooks/set used in 2017 between 900-2200 hooks/set (~1300 hooks/set in average).

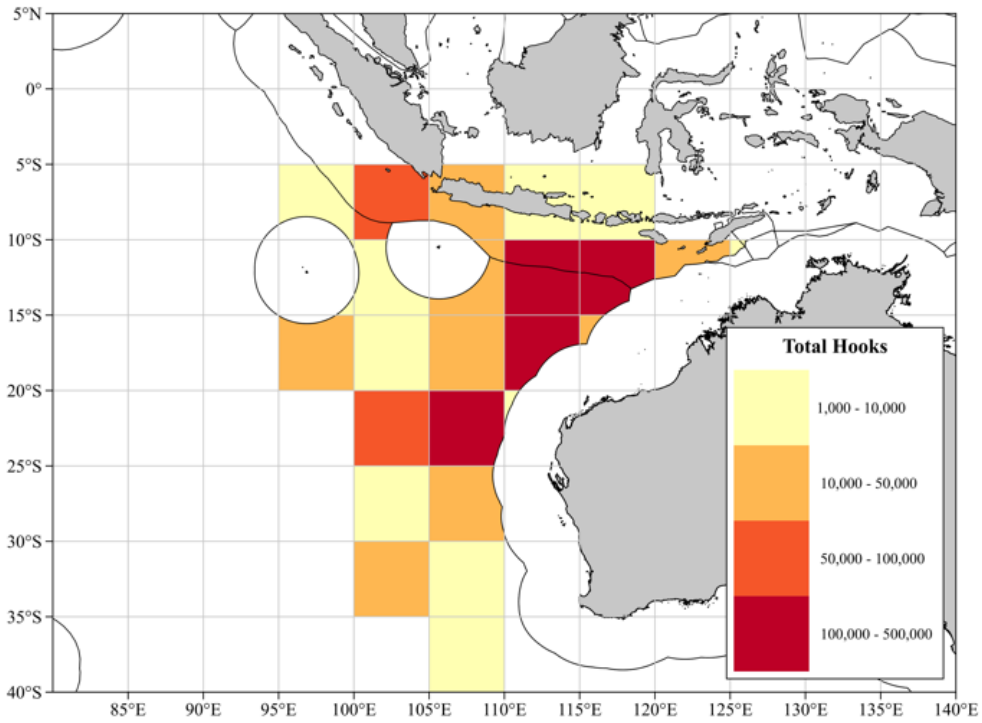


Figure 2. Map of the distribution of Indonesian tuna longline efforts year 2017 (source: Longline Logbook Data).

Reported catch in 2017 for three main species of tuna (ALB, BET and YFT) was concentrated between 10ºS-15ºS, except for albacore tuna which also caught below 20ºS. (Figure 3).

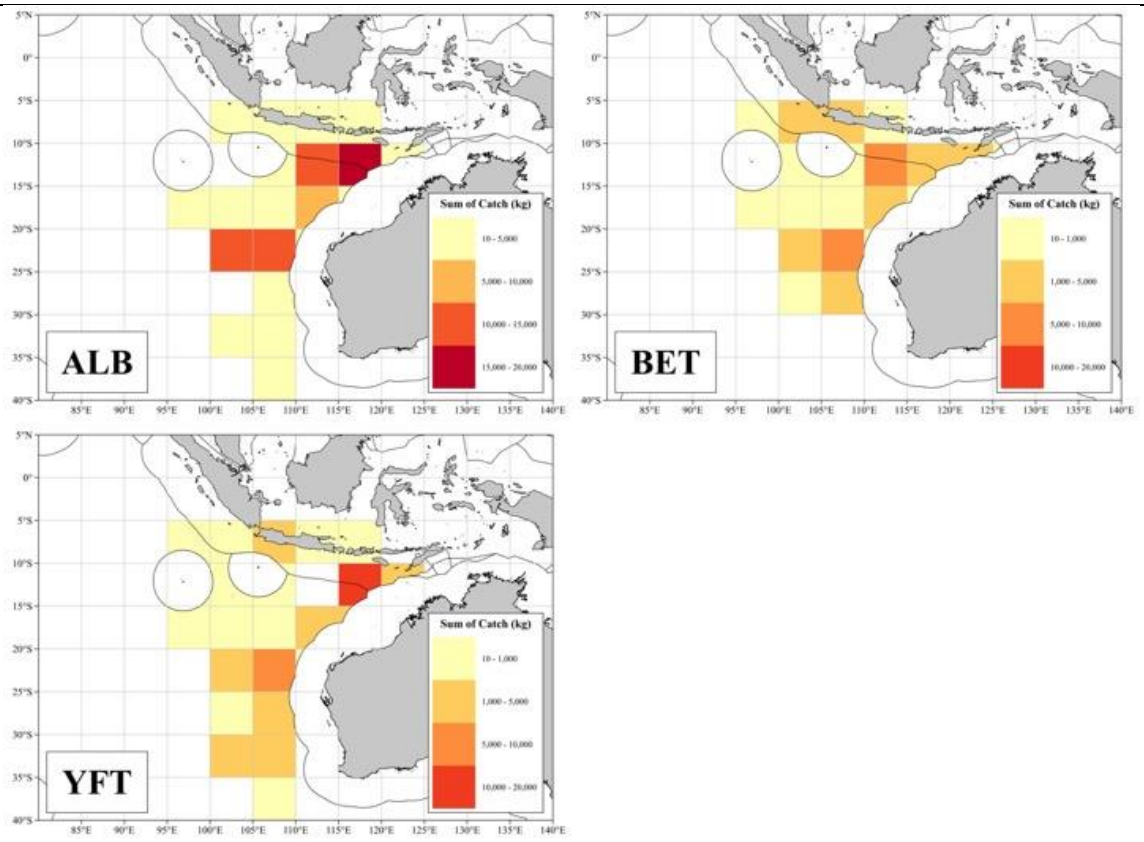


Figure 3. Map of distribution of reported catch, aggregated by species, by 5-degree blocks (source: Longline Logbook data).

3.1. Annual catch estimation at Benoa port

Annual catch that estimate from port sampling program at Benoa port reported a relatively stable trend since 2012-2016, however total estimated catch 2017 was reduced down to around 2,859 tons, 53% lower compared previous year. The recent year also recorded as the lowest estimated catch in the last 5 years (Table 3). While, the number of effort (number of landing) showed a declining trend as well over the last 5 years as it shown in Figure 4.

Table 3. Annual catch estimation by gear (LL) and primary species of tuna (ALB, BET and YFT) landed in Benoa Port from 2012-2017.

Year	Annual Catch Estimation (ton)			
	YFT	BET	ALB	**TOTAL**
2012	2,049	2,719	1,221	**5,989**
2013	2,474	2,238	688	**5,400**
2014	2,654	2,312	687	**5,653**
2015	1,283	2,989	631	**4,903**
2016	2,562	2,385	1,584	**6,531**
2017	1,135	1,367	357	**2,859**

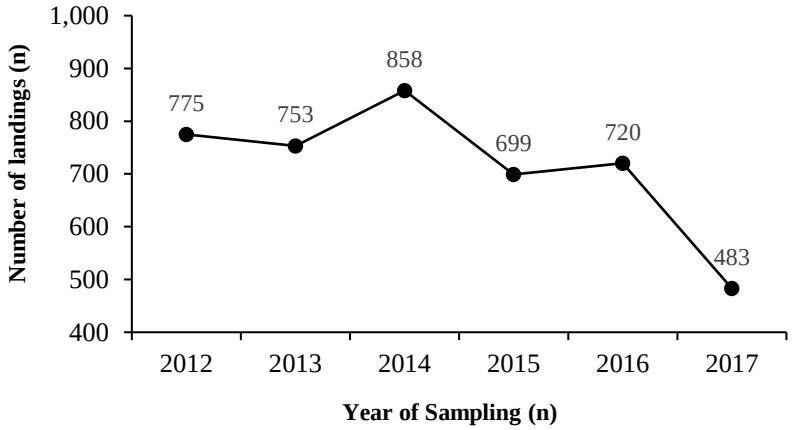


Figure 4. Total number of landing of Indonesian tuna longline vessels based in Benoa port during 2012-2017

3.2. Catch and Effort from Coastal and Artisanal Fisheries

Apart of daily monitoring on tuna landing activity in industrial scale, Research Institute of Tuna Fisheries (RITF) also conducting in small-scale fisheries since 2013. The sampling coverage was intended up to minimum 30% from total landing for each month (Table 4).

Table 4. Observed catch (ton) and landing (N) by gear and primary group species of tuna (BET, SKJ, YFT) from small scale fisheries in Indonesia during 2013-2017 (Source: Scientific Port monitoring program)

FMA	Location	Gear	2013		2014		2015		2016		2017	
			C (mt)	L (N)	C (mt)	L (N)	C (mt)	L (N)	C (mt)	L (N)	C (mt)	L (N)
573	Labuhan Lombok	HL	138	153	198	129	96	73	307	264	467	295
573	Pacitan	HL	565	716	637	763	565	564	421	381	1,629	632
573	Pacitan	PS	396	186	1,233	335	1,852	309	944	342	1,934	361
572	Sibolga	PS	11,171	884	9,117	682	9,505	903	9,953	1641	15,753	1,681

**) C = number of catch ; L = number of landing vessel*

3.3. Catch and Effort Data from Scientific Observer Program

Scientific observer program in Benoa Bali was initially a collaboration program between Indonesia's Ministry of Marine Affairs through Center of fisheries Research and Development and CSIRO Marine and Atmospheric Research (Australia), in 2005. Later, in 2011 a new research institution namely Research Institute for Tuna Fisheries (RITF) with full funded by Indonesian government is established that basically conduct continuation of scientific port sampling and scientific observer program for tuna fisheries in the Indian Ocean. Some data were collected by RITF scientific observer including catch, composition by species, fishing ground, number of setting, number of hooks etc. Following will be presented the calculated hook rate of tuna long liner recorded by observer at fishing vessels during 2005-2017. Hook

rate of tuna longline for yellowfin and bigeye tuna was relatively stable, at average 0.67/1000 hooks and 2.08/1000 hooks, respectively (Figure 5). On the other hand, the hook rate of albacore was highly fluctuated over the years.

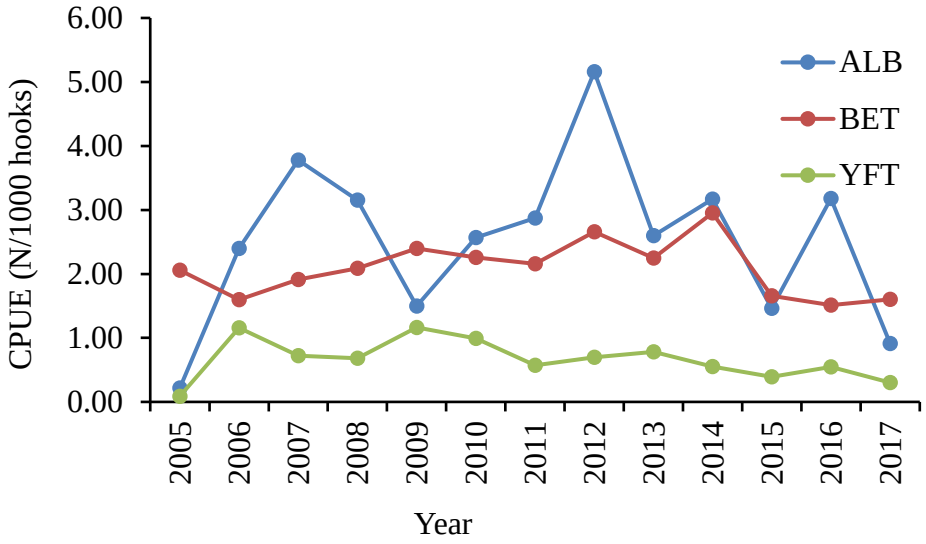


Figure 5. Nominal hook rate series (N/1,000 hooks) for large tuna (ALB, BET and YFT) based on RITF scientific observer data in the Indian Ocean (2005- 2017).

4. RECREATIONAL FISHERIES

There is no official reported catch from Indonesia recreational fishing. An organization deal with sport fishing has been established since 1997, namely "FORMASI" (*Indonesia Fishing Sport Federation*) where this organization is a member of International game fish association (IGFA), Currently no update of FORMASI activities. Indonesia government is focusing on assessing and managing commercial fishing, and would including recreational fishing in the near future.

5. ECOSYSTEM AND BYCATCH ISSUES

5.1 Sharks

Recent progress related to the management of shark in Indonesia after establishment of National Plan of Action of the Shark (NPOA-Shark) on 10th October 2010 is the issuance of ministerial decree no 12, 2012, chapter X which regulates a management and conservation of bycatch and ecological related species on tuna fisheries. Several activities to raise the fishers' awareness on the important of sharks' resource sustainability are through workshops, seminars and producing and distribute posters which prohibit several keys species of sharks to catch. In the framework of fisheries management of sharks and rays in Indonesia, the government through the minister of marine and fisheries has issued a ministerial regulation of marine and relevant fisheries management and use of sharks and rays in Indonesia, the latest regulations contained in the Minister of Marine and Fisheries No. 34/PERMEN-KP/2015 on the amendment of the Minister of Marine Affairs and Fisheries No. 59/PERMEN-KP/2014

concerning prohibition on the issuance of Oceanic white tip sharks (*Carcharhinus longimanus*) and hammerhead sharks (*Sphyrna* spp.) from the territory of Republic of Indonesia out of Indonesian territory. Indonesia also established National Plan of Action (NPOA) for sharks and rays 2015-2019.

Blue shark and crocodile shark (*Pseudocarcharias kamoharai*) dominated the incidental catch for sharks during 2013-2017. Most of the blue sharks were retained while crocodile sharks usually discarded dead (Table 5). A data series of nominal CPUE from 2005-2017 is presented in Annex 3.

Table 5. Total observed number of sharks, by species, released/discarded by the Indonesian tuna longline fleet in the IOTC area of competence (2013–2017).

Code	2013				2014				2015				2016				2017			
	N	Retained	Discarded		N	Retained	Discarded		N	Retained	Discarded		N	Retained	Discarded		N	Retained	Discarded	
			Alive	Dead			Alive	Dead			Alive	Dead			Alive	Dead			Alive	Dead
PTH	1	nil	1	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	2	2	nil	nil
BTH	1	1	nil	nil	1	1	nil	nil	nil	nil	nil	nil	4	4	nil	nil	3	3	nil	nil
CCB	4	4	nil	nil	17	17	nil	nil	1	1	nil	nil	3	3	nil	nil	nil	nil	nil	nil
FAL	nil	nil	nil	nil	nil	nil	nil	nil	26	26	nil	nil	nil	nil	nil	nil	2	1	1	nil
OCS	2	2	nil	nil	9	8	nil	1	4	4	nil	nil	4	4	nil	nil	4	4	nil	nil
CCL	nil	nil	nil	nil	nil	nil	nil	nil	1	1	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
SMA	3	3	nil	nil	2	2	nil	nil	1	1	nil	nil	5	5	nil	nil	39	8	30	1
LMA	nil	nil	nil	nil	2	2	nil	nil	1	1	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
BSH	39	38	nil	1	67	62	nil	5	nil	nil	nil	nil	105	105	nil	nil	184	160	24	nil
PSK	51	nil	nil	51	91	nil	nil	91	137	137	nil	nil	174	nil	nil	174	84	17	67	nil
SPL	1	1	nil	nil	nil	nil	nil	nil	108	nil	nil	108	nil	nil	nil	nil	nil	nil	nil	nil
TIG	1	1	nil	nil	nil	nil	nil	nil	1	1	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
ISB	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	39	1	35	3
TSK	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	6	6	nil	nil
SPY	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
THR	1	1	-	-	2	2	nil	nil	6	6	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
SHK	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil

5.2 Seabirds

RITF Scientific observer program also include seabirds on their data record and since 2005 to 2017 (only the last 5 years data are presented). There were total 76 incidental interaction with seabirds reported by the observers, most of seabirds' interaction occurred in temperate waters (high latitude). The identification of seabirds was simplified by just three categories from 2005-2016 (B1=Seagull, B2=White Albatross and B3=Black Albatross), but since 2017 the identification was improved into species level due to improvement on collecting the seabirds' data after workshop on seabird mitigation measures took place in South Africa, organized by Birdlife in November, 2017. There were 20 interactions reported with seabird during longline operation in 2017, 1 shy albatross, 1 sooty albatross and 18 great-winged petrels (Table 6). Indonesia, through Ministry of Marine Affairs and Fisheries has released Ministerial Decree (PERMEN KP) No. 12/2012 related to mitigation for ecologically related species mitigation, including seabirds which stated that installment of tori line is obligatory for every vessel operated beyond 25°S (high seas). Identification card for Seabird from IOTC had been translated into Bahasa. Indonesia had developed NPOA for Seabird in 2016 and been reviewed by Birdlife South Africa. For Seabird, Indonesia has complied fully and gets the green status.

Table 6. The number of observed incidental interaction with seabirds in tuna longline fishery from 2013-2017 (Source: RITF scientific observer data)

Code	Species	2013	2014	2015	2016	2017
DCU	Shy albatross	nil	nil	nil	nil	1
PDM	Great-winged petrel	nil	nil	nil	nil	18
PHU	Sooty albatross	nil	nil	nil	nil	1
USB	Other seabirds	nil	1	7	nil	nil

5.3 Marine Turtles

A total of 46 interactions with sea turtle were reported by the observers during 2013-2017 (Table 7). Olive-ridley turtle was the dominant species. In 2017, 5 olive-ridley turtles were reported as incidental catch, 1 released alive and 4 dead. The olive ridley turtle, loggerhead and leatherback turtles are in a vulnerable status. While green turtles are in a state endangered and even hawksbill in a state extremely endangered. Indonesia established National Plan of Action for marine turtles 2016-2020 through Directorate of Conservation of Marine Biodiversity (KKHL), Ministry of Marine Affairs and Fisheries (MMAF). Areas of critical habitats, such as migratory corridors, nesting beaches, and Inter-nesting and feeding areas were identified. Map that shows migration corridors, nesting beaches, and critical habitats for marine turtle in Indonesia are produced and available online http://kkji.kp3k.kkp.go.id/sig.

Table 7. The number of observed incidental interaction with marine turtles in tuna longline fishery from 2013-2017 (Source: RITF scientific observer data)

Code	Species	2013	2014	2015	2016	2017
DKK	Leatherback turtle	nil	nil	nil	nil	nil
LKV	Olive-ridley turtle	6	12	1	15	5
TTH	Hawksbill turtle	nil	nil	nil	nil	nil
TUG	Green turtle	nil	nil	nil	8	nil
TTX	Marine turtles nei	nil	nil	nil	nil	nil

5.4 Billfishes

Billfishes catch contributed around 5% to total catch of tuna longline during 13 years of observation (2005-2017). There were 6 species of billfishes caught by Indonesian tuna longline fleets. Swordfish has the higher nominal CPUE, range from 0.133-0.553, followed by black marlin (0.066-0.317) and blue marlin (0.007-0.287) and sailfish, striped marlin and shortbill spearfish were not considered as significant contributors (Figure 6). A data series of nominal CPUE from 2005-2017 is presented in Annex 2.

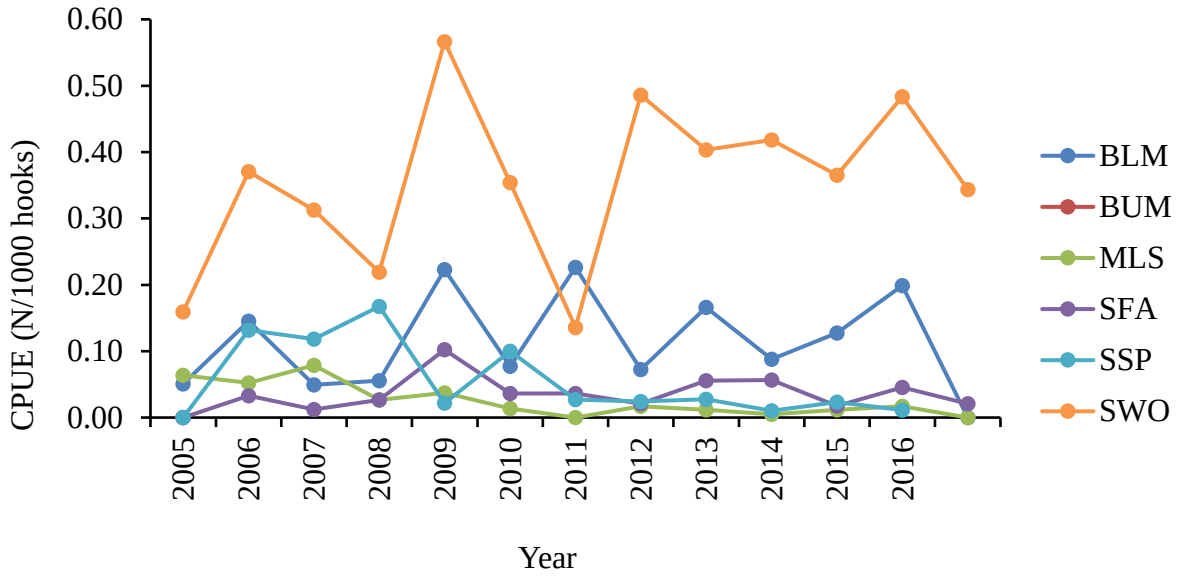


Figure 6. The nominal hook rate of known billfish species caught by Indonesian tuna longline fisheries from 2005-2017.

5.5. Other Ecologically Related Species (e.g. marine mammals, whale sharks)

Pomfret, sickle pomfret, escolar and lancet fish were the most common species caught during longline operations from 2012-2016. No marine mammals or whale sharks recorded during that periods (Table 8).

Tabel 8. The number of observed catch of others ecologically related species in longline fisheries from 2012-2017 (source: RITF scientific observer data).

Code	Species	2013	2014	2015	2016	2017
BAR	Baracuda	nil	4	5	6	nil
DOL	Common dolphinfish	11	15	7	13	32
DCO	Dolphin	nil	nil	nil	nil	1
EIL	Brilliant pomfret	5	nil	nil	nil	1
HAR	Long nose chimaeras	22	3	14	46	nil
LEC	Escolar	284	666	490	353	240
LAG	Moon fish	51	29	30	60	13
MOX	Ocean Sunfish	11	3	2	1	nil
ALX	Long snouted lancetfish	1,738	921	739	693	796
OHR	Other hairtail fish	1	nil	nil	nil	nil
OIL	Oilfish	7	58	16	8	24
TCR	Pomfret	91	90	45	62	42
TRF	Tappertail ribbon fish	3	1	nil	nil	nil
TST	Sickle pomfret	60	110	29	117	105
WAH	Wahoo	60	96	63	61	30

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS

6.1. Logsheet data collection and verification

Template of Indonesia fishing logbook was developed under the collaboration with IOTC, WCPFC, CCSBT and OFCF Japan. There are three (3) types of logbook template such as longline/handline; purse-seine/pole and line and other gear. For implementation of this logbook program, Ministry of Marine Affairs and Fisheries has released Regulation Number 18 Year 2010 of 5 October 2010. It is stipulated that logbook report has to be submitted to port authority prior to catch landing and mandatory to vessels above 5 GT. Issues on data entry and validity as well as the need for verification and validation prior to analysis is remained. For effective implementation of this program, it is necessary to continuing introducing this program and strengthen capacity both to fishers and port officers. The result listed in Table 9.

Table 9. The number of vessels submitted logbook (source: DGCF).

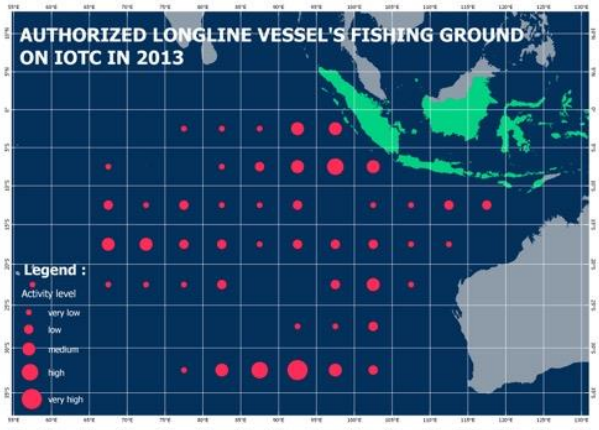
No	FMA	2013	2014	2015	2016	2017
1	571	92	53	58	24	na
2	572	315	720	1,202	1,182	na
3	573	1,600	1,210	1,031	941	483
Total		**2,007**	**1,983**	**2,291**	**2.147**	**1,947**

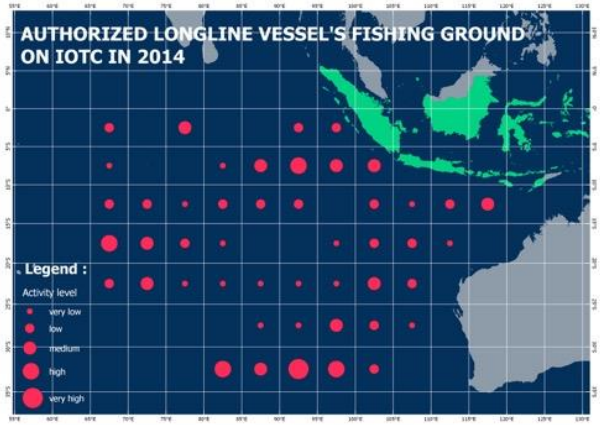
6.2. Vessel Monitoring System

Vessel Monitoring System **(**VMS) for fishing vessels has been started to be implemented in Indonesia since 2003, Currently, trough Ministerial Regulation No. 42/2015 about fisheries vessel monitoring system, all fishing vessel above 30 GT or operating in high seas are mandatory to be equipped with VMS transmitter. Without VMS transmitter on board, the fishing vessel will not get permission to leave the fishing port for their fishing operations, Fishing monitoring center (FMC) for Indonesia's VMS is base in Jakarta, In order to fight against illegal, unreported and unregulated (IUU) Fishing, Indonesia has started to implement Database Sharing Systems for Fisheries Management, The system is developed to integrate a number of databases, including the licensing, logbook and VMS databases, The Launching of the system application has recently been made by the Minister of Marine and Fisheries on 19 November 2013 in Jakarta that will be applied to 45 fishing ports of Indonesia, fisheries Information and services for Indonesia VMS is provided and could be accessed at http://dkpvms.dkp.go.id. Interactive VMS data visualization can also be accessed at http://globalfishingwatch.org/map/, which showing a strong statement from Indonesian government in response to fisheries transparency. Figure 8 showed the spatial distribution of Indonesia fleets based on VMS information.

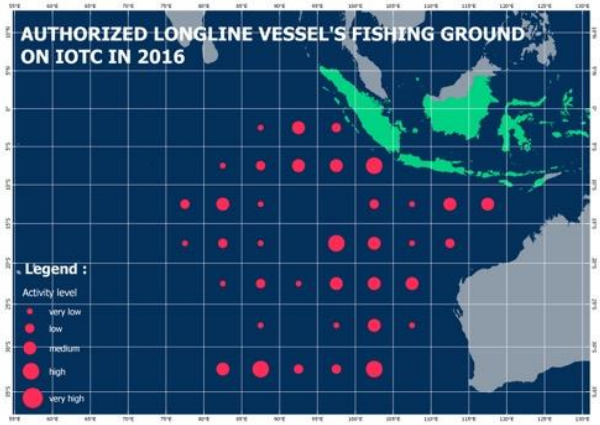
A)

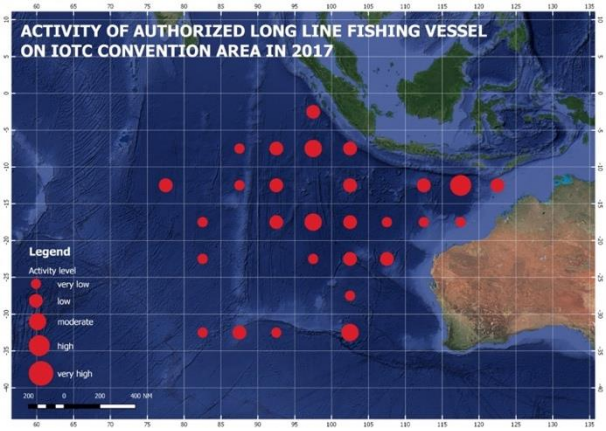

AUTHORIZED LONGLINE VESSEL'S FISHING GROUND
ON IOTC IN 2012
Legend :
Activity level
very low
low
medium
high
very high


AUTHORIZED LONGLINE VESSEL'S FISHING GROUND
ON IOTC IN 2013
Legend :
Activity level
very low
low
medium
high
very high


AUTHORIZED LONGLINE VESSEL'S FISHING GROUND
ON IOTC IN 2014
Legend :
Activity level
very low
low
medium
high
very high


AUTHORIZED LONGLINE VESSEL'S FISHING GROUND
ON IOTC IN 2015
Legend :
Activity level
very low
low
medium
high
very high


AUTHORIZED LONGLINE VESSEL'S FISHING GROUND
ON IOTC IN 2016
Legend :
Activity level
very low
low
medium
high
very high


ACTIVITY OF AUTHORIZED LONG LINE FISHING VESSEL
ON IOTC CONVENTION AREA IN 2017
Legend
Activity level
very low
low
moderate
high
very high

B)

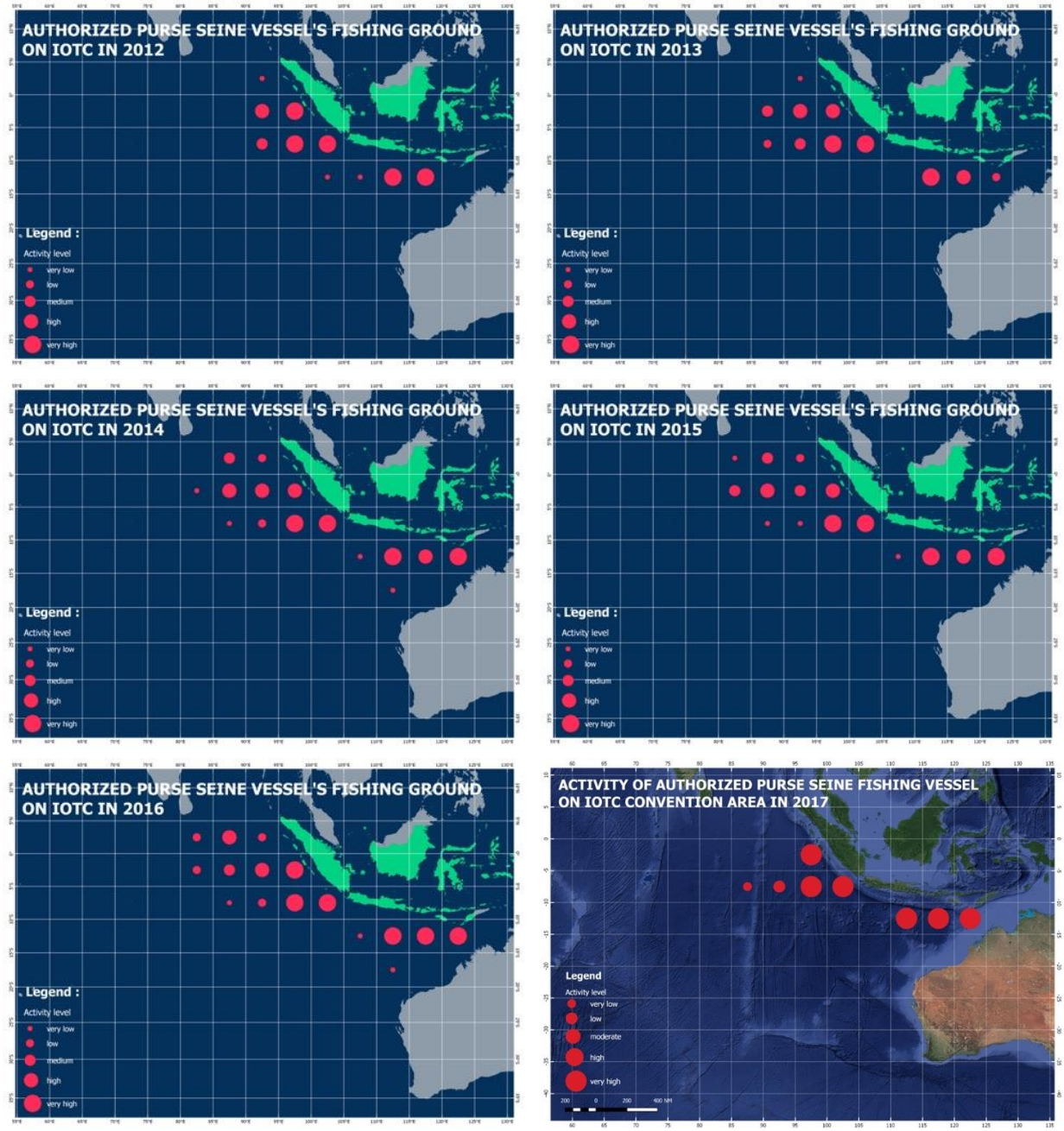


Figure 7. Map of spatial distribution of longline (A) and purse seine (B), aggregated from 2012 to 2017 based on VMS data (Source: DJMFRS).

6.3. Regional Observer Program (ROP) & Regional Observer Scheme (ROS)

Indonesia have joined Regional Observer Program (ROP) for Transshipment at Sea since 2009 under resolution IOTC No, 08/02, which has been superseded by Resolution 11/05 and Resolution 12/05 concerning on establishing a program for transshipment by large-scale fishing vessels stated that "*Each CPC shall ensure that all carrier vessels transshipping at sea have on board an IOTC observer"*. Indonesia also established scientific observer program in accordance with IOTC resolution 11/04 related to Regional Observer Scheme (ROS). It was initially a collaboration program between Indonesia's Ministry of Marine Affairs through research center for capture fisheries and CSIRO Marine and Atmospheric Research (Australia), in 2005 (see sadiyah *et al* 2011), Later, in 2011 a new research institution namely Research Institute for Tuna Fisheries (RITF) with full funded by Indonesian government is established that basically conduct continuation of port sampling and scientific observer program for tuna fisheries in the Indian Ocean. The number of scientific observers involved until 2017 was 15 observers. Since 2013 the deployment of observers are extended to other gears, such as: small scale purse seine, coastal drifting gillnet and troll line/hand line (Table 10a-d). Ministerial regulation of MMAF No. 01/2013 formally regulates a National Observer Program for fishing and carrier vessel, a positive progress to secure government budget for observer program in the future.

Table 10a. Activity summary of Indonesian ROS from 2013-2017 (gear= longline).

Year	No. Of Obs	No. Of Trips	No. Of Company	Total Day at Sea	Days/Trip	Avg (d/trip)
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	9	9	9	427	9-86	50
2017	12	15	13	529	8-68	42

Table 10b. Activity summary of Indonesian ROS from 2013-2017 (gear= purse seine).

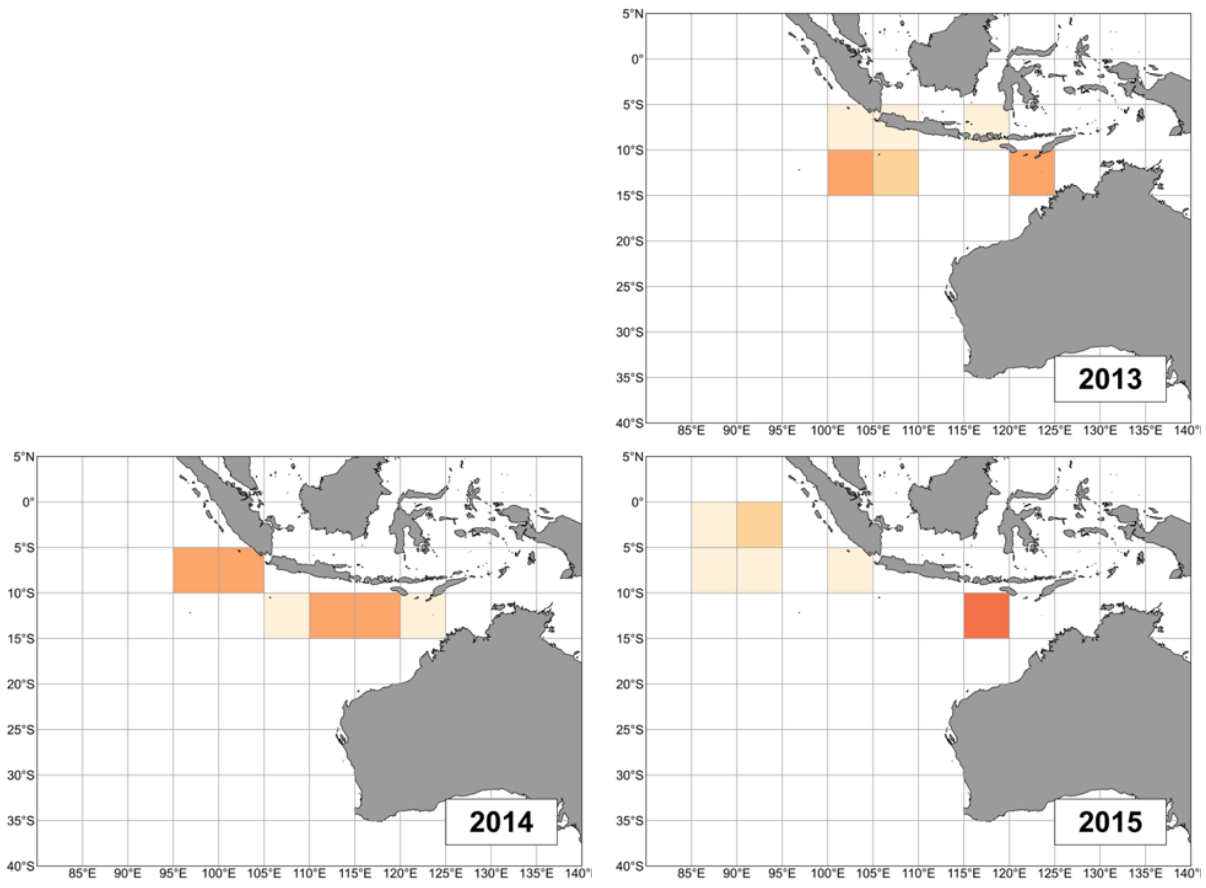
Year	No. Of Obs	No. Of Trips	No. Of Company	Total Day at Sea	Days/Trip	Avg (d/trip)
2013	1	2	2	21	9-12	10.5
2014	2	1	1	2	1-2	1.5
2015	2	1	1	10	8-15	10.5
2016	24	26	26	1714	2-76	65.9
2017	3	10	10	119	3-25	11.9

Table 10c. Activity summary of Indonesian ROS from 2013-2017 (gear= hand line).

Year	No. Of Obs	No. Of Trips	No. Of Company	Total Day at Sea	Days/Trip	Avg (d/trip)
2013	1	2	2	19	9-10	9.5
2014	10	70	10	70	1	1
2015	-	-	-	-	-	-
2016	4	4	4	40	8-13	10.0
2017	17	37	2	625	5-35	16.9

Table 10d. Activity summary of Indonesian ROS from 2013-2017 (gear= gillnet).

Year	No. Of Obs	No. Of Trips	No. Of Company	Total Day at Sea	Days/Trip	Avg (d/trip)
2013	-	-	-	-	-	-
2014	-	-	-	-	-	-
2015	6	3	3	41	12-15	13
2016	-	-	-	-	-	-
2017	1	1	1	14	11	14



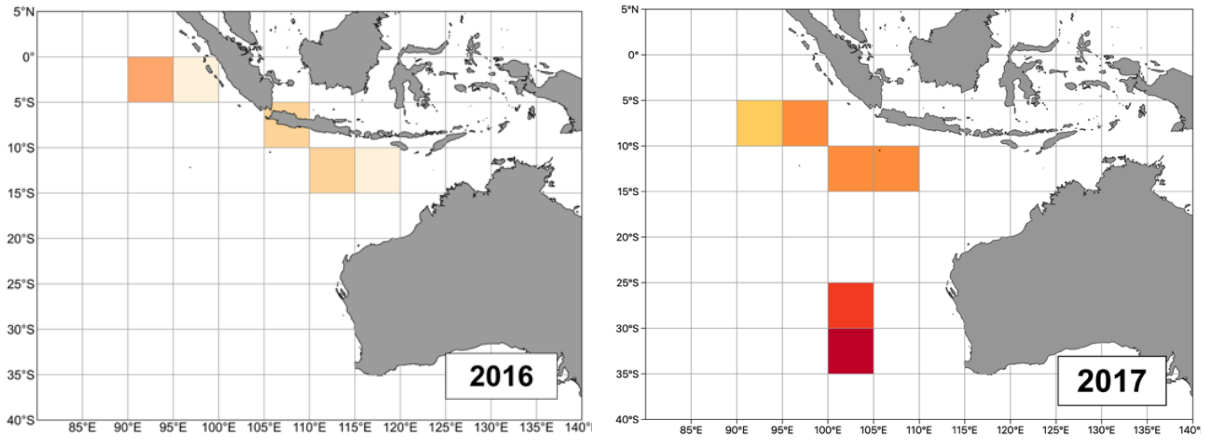


Figure 8a. Spatial distribution of the observed sets (gear=longline) from 2013 to 2017, the darker areas show intensity of fishing sets (source: Indonesian ROS data)

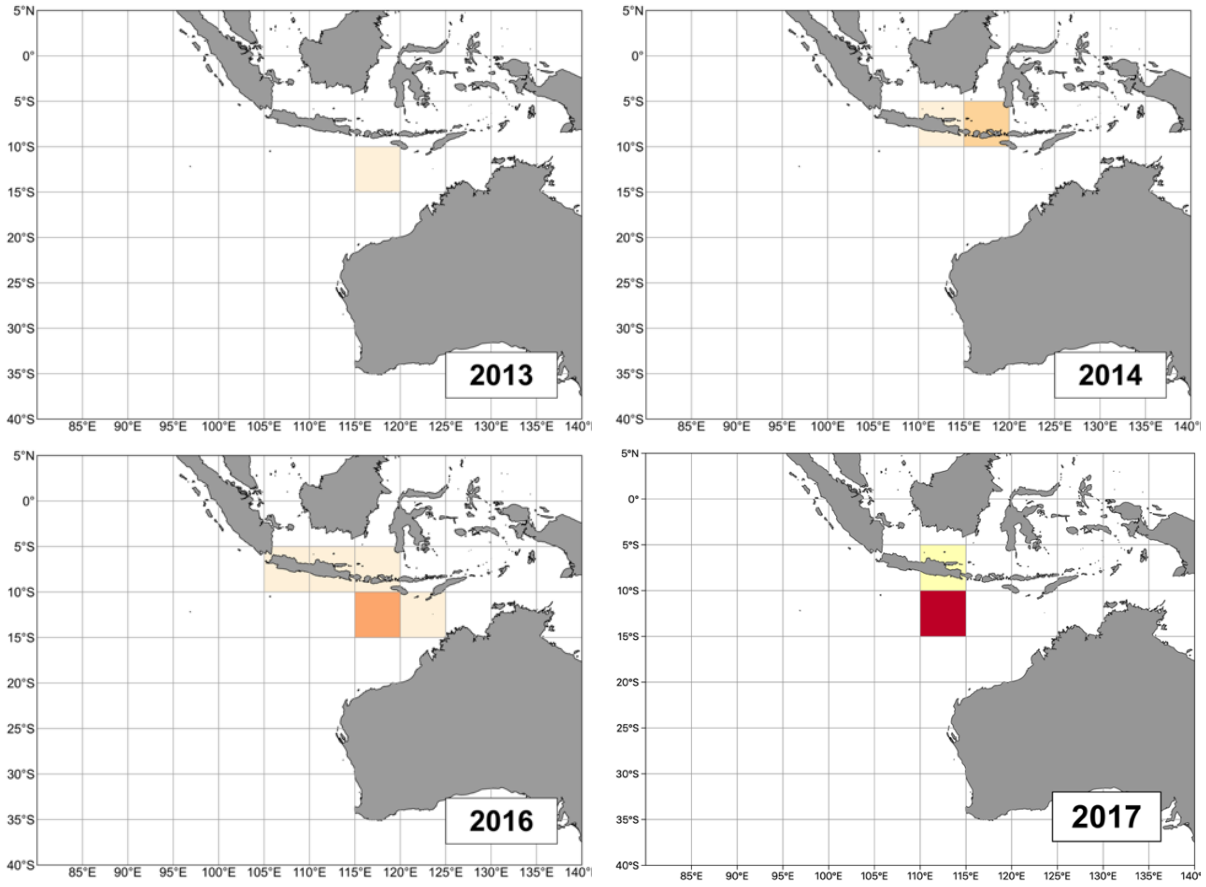


Figure 8b. Spatial distribution of the observed sets (gear=hand line) from 2013 to 2017 (No observer deployed in 2015), the darker areas show intensity of fishing sets (source: Indonesian ROS data)

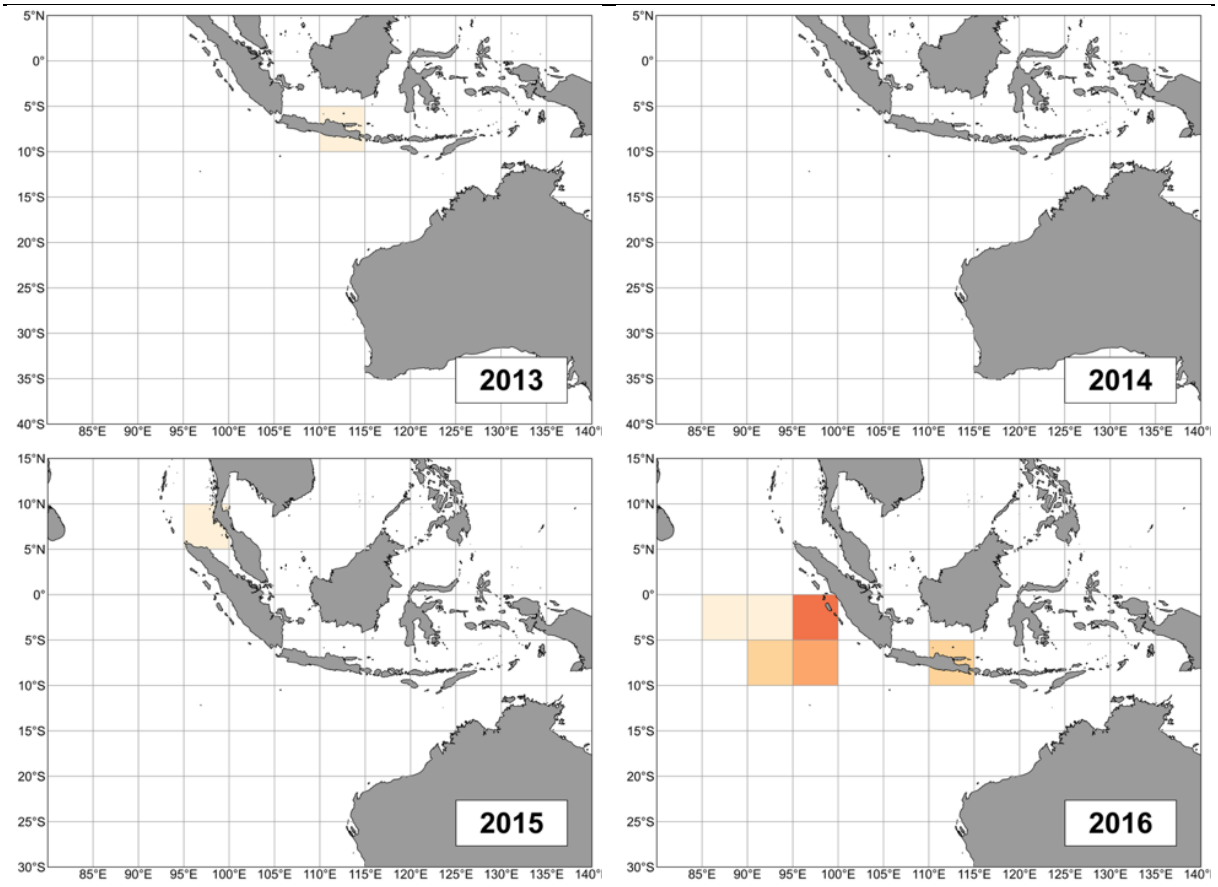


Figure 8c. Spatial distribution of the observed sets (gear=purse seine) in 2015 (no observer deployed in 2017), the darker areas show intensity of fishing sets (source: RITF Indonesian ROS data)

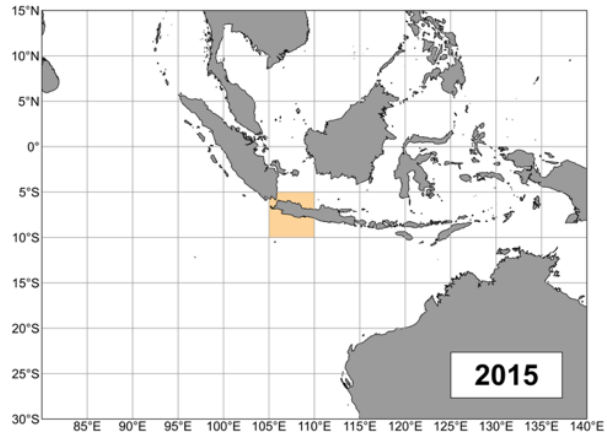


Figure 8d. Spatial distribution of the observed sets (gear=gillnet) in 2015 (source: Indonesian ROS data)

The observed longline sets from 2013 to 2017 covered the Eastern Indian Ocean between latitudes 0° and 35°S and longitudes 75° and 135°E (Figure 8). The observed sets mostly occurred within the area between 10° - 20°S and 105° - 120°E. National observer program also conducted by DGCF and has recruited and trained at least 150 observer candidates in 2014.

6.4. Port sampling program

RITF continue tuna catch monitoring program at Benoa Fishing Port with a minimum 30% coverage of landings at each processing plants a target coverage, as reported in previous year the coverage of port sampling in 2013-2017 was above 50% (Table 11).

Table 11a. Number of individuals sampled, by species and gear from daily tuna and tuna-like species monitoring based in Benoa Port 2013-2017.

Code	Species	No. of fish sampled				
		2013	2014	2015	2016	2017
ALB	Albacore	5,049	27,740	21,648	22,643	21,452
BET	Bigeye tuna	29,504	40,431	45,039	34,415	25,695
YFT	Yellowfin tuna	32,253	41,720	17,909	29,229	20,610
BUM	Blue marlin	726	716	780	219	216
BLM	Black marlin	318	342	120	111	48
MLS	Striped marlin	193	108	115	201	60
SSP	Shortbill spearfish	113	68	192	337	209
SFA	Indo-Pacific sailfish	262	383	546	440	391
SWO	Swordfish	3,049	4,177	4,336	2,966	2,318
LEC	Escolar	1,990	13,705	9,567	5,201	15,006
OIL	Oilfish	240	1,120	1,842	1,394	849
WAH	Wahoo	402	1,776	1,102	913	325
CDF	Common dolphinfish	86	221	359	445	921
BSH	Blue shark	87	2,058	4,732	9,148	8,404
MSO	Shortfin mako shark	21	83	124	166	168
OCS	Oceanic whitetip shark	69	99	153	66	20
TSS	Bigeye thresher shark	3	2	32	nil	2
MON	Moonfish	724	6,795	9,709	5,690	4,820
BAR	Barracuda	14	19	15	nil	5

Table 11b. Coverage percentage of daily tuna and tuna-like species monitoring program based in Benoa port 2012-2017.

Year	No. Landed Vessel	No. Sampled Vessel	Sampling Coverage
2013	753	431	57.24%
2014	858	521	60.72%
2015	699	477	68.24%
2016	720	434	60.28%
2017	483	374	77.43%

IOTC required at least a representation of a fish every 1 metric ton produced to sampled from all CPC. Coverage of size data collection relative to tuna and tuna-like species catches from Indian Ocean region derived from port monitoring program conducted by RITF and DGCF (PELAGOS) in Annex 4.

6.5. Unloading/Transhipment

Since the implementation of Ministerial Decree No. 57/PERMEN/2014 concerning the banning of any transhipment at sea. DGCF reported that no Indonesian flagged vessel involved in transhipment activity in 2017.

7. NATIONAL RESEARCH PROGRAMS

- *Project title* : Enabling Enforcement Through Improved Use Of The Monitoring Information To Support Surveillance, Project Duration : 2016-2018
- *Project title* : Population structure of Tuna, Billfish and Sharks in the Indian Ocean, Project Duration : 2017-2019.
- *Project title* : Characteristic of Tuna Fisheries FMA 573, RITF 2017
- *Project title* : Tuna Harvest Strategy Implementation, Project Duration : 2016-2019

8. IMPLEMENTATION OF SCIENTIFIC COMMITTEE RECOMMENDATIONS AND RESOLUTIONS OF THE IOTC RELEVANT TO THE SC.

Indonesia participates in several IOTC SC working parties. Scientific observer and port sampling program are continued to monitor catch and effort of tuna and other ecologically related species in order to implement scientific Committee Recommendation.

Table 12. Scientific requirements contained in Resolutions of the Commission, adopted between 2005 and 2017.

Res. No.	Resolution	Scientific requirement	CPC progress
15/01	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–10	Catch and effort data are recorded based on: - Ministerial Decree No. 48/PERMENKP/2014 on logbook - Ministerial Decree No. 1/PERMENKP/2013 on observer on board - Implementation of scientific observer on board
15/02	Mandatory statistical reporting requirements for	Paragraphs 1–7	- Nominal catch data has been submitted - Logbook program started

Res. No.	Resolution	Scientific requirement	CPC progress
	IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)		- Tuna size data of longline-fleet have been submitted
13/04	On the conservation of cetaceans	Paragraphs 7– 9	- Indonesia has been implementing Resolution 13/04 through Government Regulation No 7/1999. - Ministerial Regulation number 12/PERMENKP/2012 regarding captured fisheries fishing bussiness on high-seas
13/05	On the conservation of whale sharks (*Rhincodon typus*)	Paragraphs 7– 9	Indonesia has issued Ministerial Decree number 18/KEPMENKP /2013 regarding conservation of whale shark in Indonesian water
13/06	On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries	Paragraph 5–6	Indonesia has developed national plan of action (NPOA) Shark on 10 October 2010 as well as ministerial decree no 12-2012 chapter X which regulate a management and conservation of by-catch and ecological related tuna involved in tuna fisheries.
12/09	On the conservation of thresher sharks (family alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4–8	Indonesia has been implementing Ministerial Regulation number 12/PERMENKP/2012 regarding capture fisheries fishing business on high-seas
12/06	On reducing the incidental bycatch of seabirds in longline fisheries.	Paragraphs 3–7	Indonesia has been implementing Ministerial Regulation number 12/PERMENKP/2012 regarding captured fisheries fishing business on high-seas
12/04	On the conservation of marine turtles	Paragraphs 3, 4, 6–10	Indonesia has been implementing Ministerial Regulation number 12/PERMENKP/2012 regarding captured fisheries fishing business on high-seas
11/04	On a regional observer scheme	Paragraph 9	Indonesia has been implementing Ministerial

Res. No.	Resolution	Scientific requirement	CPC progress
			Regulation number 1/PERMENKP/2013 regarding observer onboard
05/05	Concerning the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 1–12	- Indonesia has been implementing Ministerial Regulation number 12/PERMENKP/2012 regarding capture fisheries fishing business on high-seas - NPOA shark and ray

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Annex 1. Summary of average monthly CPUE of tuna (kg/1000 hooks) derived from logbook data.

Month	ALB	BET	YFT	Fishing Ground
1	79.11	32.65	61.24	Eastern Indian Ocean
2	78.26	33.60	72.59	Eastern Indian Ocean
3	107.44	38.41	65.29	Eastern Indian Ocean
4	51.83	43.77	59.42	Eastern Indian Ocean
5	48.60	27.99	42.19	Eastern Indian Ocean
6	57.00	17.23	34.86	Eastern Indian Ocean
7	61.45	14.40	32.55	Eastern Indian Ocean
8	86.63	29.76	72.17	Eastern Indian Ocean
9	92.91	30.77	70.80	Eastern Indian Ocean
10	73.03	28.91	75.94	Eastern Indian Ocean
11	19.48	29.83	61.23	Eastern Indian Ocean
12	73.84	26.79	65.79	Eastern Indian Ocean

Annex 2. Summary of nominal CPUE of billfish (N/1000 hooks) derived from observer data.

Year	BLM	BUM	MLS	SFA	SSP	SWO	Fishing Ground
2005	0.05	0.01	0.06	-	-	0.16	Eastern Indian Ocean
2006	0.15	0.09	0.05	0.03	0.13	0.37	Eastern Indian Ocean
2007	0.05	0.03	0.08	0.01	0.12	0.31	Eastern Indian Ocean
2008	0.06	0.05	0.03	0.03	0.17	0.22	Eastern Indian Ocean
2009	0.22	0.07	0.04	0.10	0.02	0.57	Eastern Indian Ocean
2010	0.08	0.10	0.01	0.04	0.10	0.35	Eastern Indian Ocean
2011	0.23	0.23	-	0.04	0.03	0.14	Eastern Indian Ocean
2012	0.07	0.13	0.02	0.02	0.02	0.49	Eastern Indian Ocean
2013	0.18	0.20	0.01	0.06	0.03	0.34	Eastern Indian Ocean
2014	0.08	0.08	0.00	0.05	0.01	0.48	Eastern Indian Ocean
2015	0.13	0.09	0.01	0.02	0.02	0.37	Eastern Indian Ocean
2016	0.20	0.05	0.02	0.05	0.01	0.48	Eastern Indian Ocean
2017	0.05	0.02	0.03	0.04	0.11	0.24	Eastern Indian Ocean

Annex 3. Summary of nominal CPUE of some sharks (N/1000 hooks) derived from observer data.

Year	BSH	FAL	Fishing Ground
2005	1.27	0.00	Eastern Indian Ocean
2006	1.62	0.12	Eastern Indian Ocean
2007	1.21	0.02	Eastern Indian Ocean
2008	0.94	0.01	Eastern Indian Ocean
2009	0.75	0.17	Eastern Indian Ocean
2010	0.77	0.12	Eastern Indian Ocean
2011	0.76	0.00	Eastern Indian Ocean
2012	2.05	0.00	Eastern Indian Ocean
2013	1.10	0.00	Eastern Indian Ocean
2014	1.10	0.00	Eastern Indian Ocean
2015	1.26	0.24	Eastern Indian Ocean
2016	0.01	0.00	Eastern Indian Ocean
2017	0.10	0.06	Eastern Indian Ocean

Annex 4. Number of sizes measured (tuna and tuna like species) in 2013-2017 under port monitoring program (RITF & PELAGOS).

Code	2013			2014			2015			2016			2017		
	C (mt)	S (n)	P (%)	C (mt)	S (n)	P (%)	C (mt)	S (n)	P (%)	C (mt)	S (n)	P (%)	C (mt)	S (n)	P (%)
ALB	6,095	582	9.55%	8,750	279	3.19%	7,301	630	8.63%	7,179	5,947	82.83%	3,154	2,831	89.75%
BET	35,505	14,811	41.72%	32,412	12,651	39.03%	18,665	15,650	83.85%	22,135	20,993	94.84%	74,487	21,060	28.27%
YFT	61,380	9,073	14.78%	45,122	9,109	20.19%	40,571	4,821	11.88%	36,485	11,045	30.27%	1,751	7,563	432.00%
SKJ	94,437	2,621	2.78%	72,088	4,117	5.71%	80,938	7,097	8.77%	72,359	5,055	6.99%	60,066	7,390	12.30%
BLM	3,701	486	13.13%	4,839	377	7.79%	3,466	477	13.76%	3,123	382	12.23%	631	607	96.17%
BUM	453	448	98.90%	765	408	53.33%	1,032	638	61.82%	1,426	583	40.90%	209	726	347.53%
MLS	745	38	5.10%	1,190	11	0.92%	983	7	0.71%	656	8	1.22%	257	2	0.78%
SFA	3,239	268	8.27%	4,206	253	6.02%	3,281	281	8.56%	1,948	164	8.42%	987	392	39.72%
SWO	9,946	937	9.42%	8,190	817	9.98%	5,675	607	10.70%	6,066	1,375	22.67%	792	1,012	127.79%
FRI	73,044	0	0.00%	46,690	1,110	2.38%	70,705	512	0.72%	77,205	357	0.46%	10,279	10	0.10%
BLT	23,386	0	0.00%	27,934	196	0.70%	13,429	750	5.58%	6,723	385	5.73%	17,696	385	2.18%
KAW	38,747	0	0.00%	43,511	1,119	2.57%	40,547	312	0.77%	34,512	50	0.14%	0	5	0.00%

C (mt) : Catch in metric tons
S (n) : Size sampled in number
P (%) : Percentage of coverage