CCSBT-ESC/1609/SBT FISHERIES – **Indonesia**
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INDONESIA SOUTHERN BLUEFIN TUNA FISHERIES[1]

A National Report Year 2015

prepared by

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SUMMARY

Southern bluefin tuna (*Thunnus* maccoyii Castelnau, 1872) is one of the tuna species seasonally caught by tuna longliner in Indian Ocean. Base on 2015 catch monitoring program, number of active longline vessels in port of Benoa related to SBT is 114 units, this is lower than 2015 (154 units), however, number of landing vessels were 699 vessels or 34% higher than 2014 (521). Onboard observer activity on CCSBT authorized fishing vessels were completed for 241 days and all activity were done in statistical area 1. CDS data shows the estimate total catches in 2015 at about 5944 individual SBT with total weight of 593 tons (DGCF, 2016 *in prep).* The catches were recorded from vessel with size of 14 to 180 GT and 43% were landed by vessel size of < 30 GT. Regular port sampling activities in Benoa revealed that size distribution of SBT ranged from 97 to 225 cmFL with an average of 160 cmFL.

Introduction

Southern Bluefin Tuna (*Thunnus maccoyii*, SBT) is one of tuna species seasonally caught by the tuna longliners. The fleets mainly based on Benoa and operating in Indian Ocean. Catch monitoring regularly conducted by RITF through enumerator and onboard observer program. CDS data were also explored to describe the major fishing ground of SBT. This report provides update information of Indonesian southern bluefin tuna fisheries during the year 2015.

Catch and Effort

Port sampling and monitoring on catch of SBT were continuously applied in 2015 and the result showed that estimated monthly landing slightly shifted with previous years (see Satria *et al*., 2013; Nugroho *et al.,* 2014 & 2015). The highest landing occurred in February and October and the lowest landing between June to August. The pattern of monthly fluctuation is similar with the 5 previous consecutive years (2010-2014). This figure constantly explained that SBT being more abundant on the fishing grounds and more significant proportion of the overall tuna catch during the SBT spawning season, which is occurred during September to April (Figure 1).

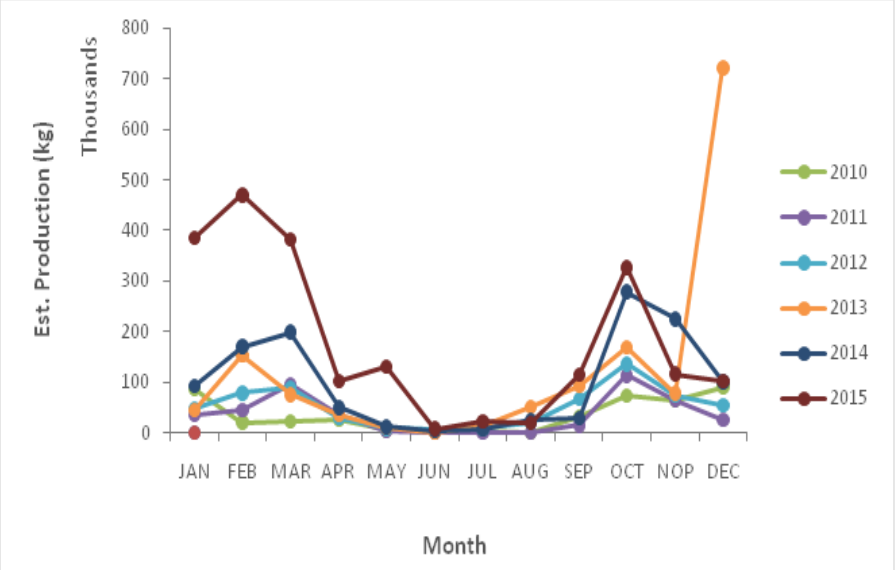

Figure 1. Monthly landing of SBT at Benoa in 2010 – 2015.

Catch Documentation scheme (CDS)

The 2015 CDS data indicated that 114 authorized tuna Longliner involved with SBT. All the catch data from statistical area 1 with length ranged at 70 to 270 cmFL. This explain that the fishing pressures of the SBT in statistical area 1 as represented by number of active vessels were decrease (36%) compare to 2014 (176 longliner), the estimated catch decreased (16%) or 112 tons (407 individuals). There is no data reported from statistical area 2 & 8 (Appendix 1).

The estimate annual landing based on port sampling were under validation process. The estimate catch based on SBT CDS data is 593 tons, this is 20% less than agreed TAC for Indonesia. The catches were controlled by a new database system introduced by DGCF as part of commitment to manage the annual catch data under TAC scheme. Figure 2 shows the annual reported catch during period of 2004 – 2015.

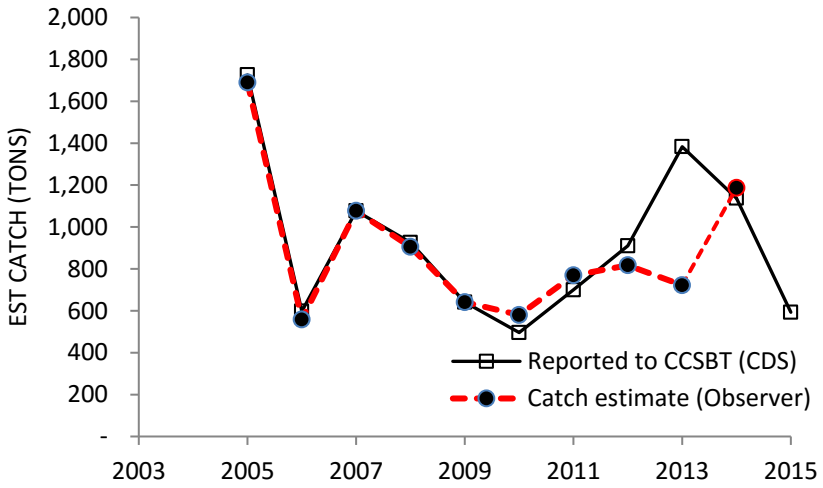

Figure 2. Annual reported SBT catch (2004 – 2015)
Source : DGCF (2016)

Fishing intensity of tuna fishery represented by number of landing vessels showed that the number of vessels is relatively stable at low level (25% to 2004) since 2012 (Figure 3). Numbers of tuna longliner vessels that landing during 2015 were 699 units, among those 447 units (67%) were enumerated and 204 units were noticed with SBT on board.

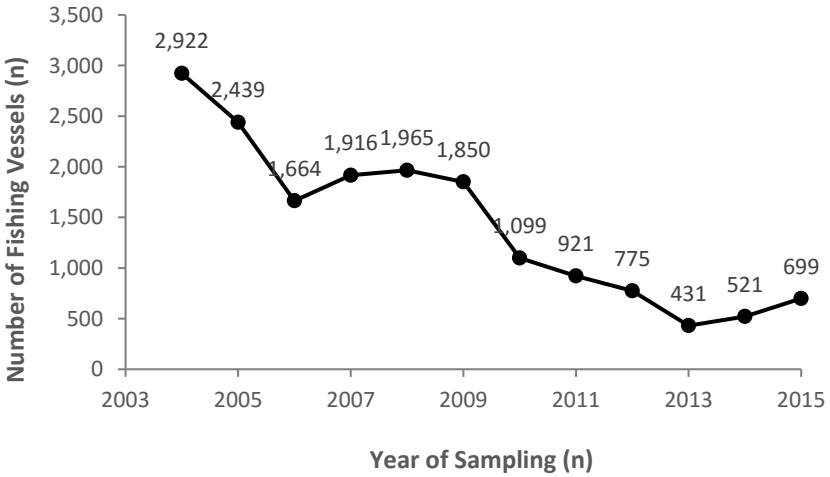

Figure 3. Number of tuna longliner landing at Benoa fishing port 2015
Source: RITF (2015).

Length frequency distribution

Port sampling program during 2015 fishing season indicates that a total of 4028 SBT specimens were measured and weighted to the nearest kilograms. During this fishing season, the length frequency distribution shows slightly different compare to the 2014. The size frequency during period of September 2015 to April 2016 ranged between 97 cm to 225 cmFL with an average of 160 cmFL (Figure 4). The result shows that the proportion of small size (<150 cm) at about 8.8%. This is much lower compared to three previous consecutive years (17; 32 and 51%) (Figure 5). The frequency distribution presented in Appendix 3.

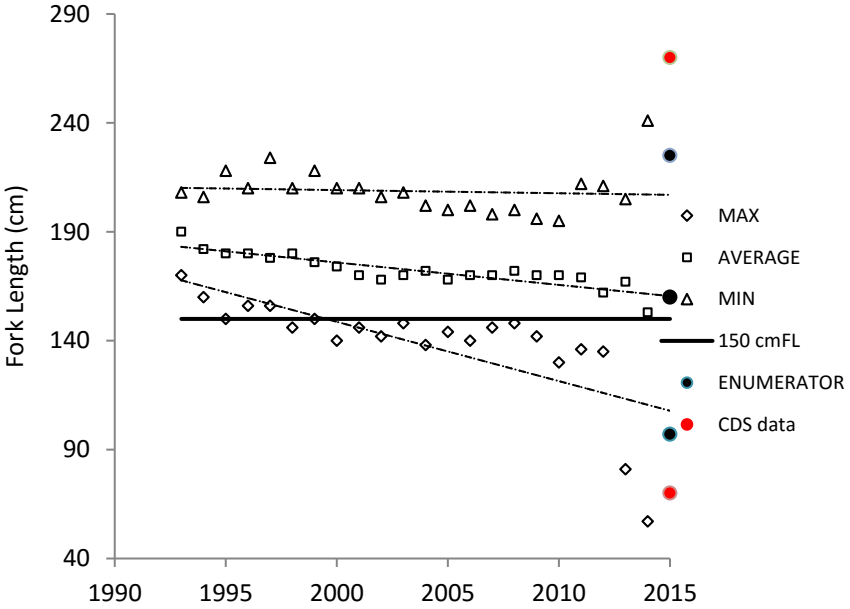

Figure 4. Updated Annual trend of average size of SBT landed in Benoa during 1993 - 2015 (Min=97, Max=225, Mean=159,64)

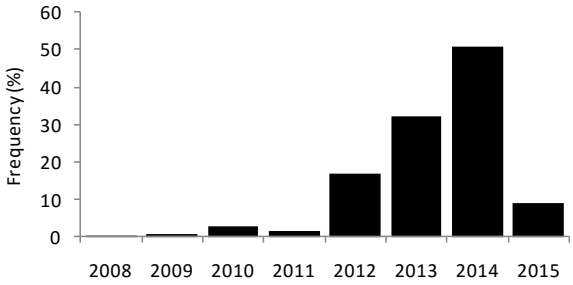

Figure 5. Proportion of annual catch SBT < 150 cmFL

Scientific Observer

Regular scientific observer activity deployed in 5 trips on authorized fishing vessels. Day at sea ranged from 31 to 61 fishing days per trip with total efforts of 174,655 hooks. Geographically, the capacity of scientific observer covered the fishing ground of statistical area 1. The operational aspects were showed in Table 1.

Table 1. Observer activities in authorized Fishing Vessels in 2015.

Trip	Base	Date	DAS	No of setting	No of Hooks	No of SBT	HR ($x10^3$)	CCSBD Statistical area
1	MUARA BARU	09/04/15	44	22	22672	0	0	
2	CILACAP	04/12/15	57	42	46528	0	0	
3	PALABUHANRATU	01/19/15	48	35	44544	0	0	
4	CILACAP	11/25/15	31	18	18006	1	0.054	1
5	BENOA	08/21/15	61	33	42905	11	0.237	1

Hook rates

Total number of 12 SBT caught during the observations. The highest catch appeared in 5th trip in August 2015 based on deploying of 42905 hooks and the data showed that hook rates of SBT ranging from 0 to 0.237 (Table 2).

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

SBT					
TRIP	n	HR	Length (cmTL)		
			Average	Min	Max
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	1	0.054	175	175	175
5	11	0.237	170	160	180

Ecological related species

The species compositions are listed in appendix 2. The catch dominated by bigeye tuna (37%) followed by southern bluefin tuna (26 %), yellowfin tuna (15%)

and albacore (7%). Several ecological related species were incidentally caught and the species were dominated by Lancet fish (NGA *Alopisaurus sp.*) 36%, Escolar (*Lepidocybium flavobrunneum*) 24% and Pelagic stingray (DAV *Dasyatis violacoa* → *Pteropla*) 10%. Total number of 2061 specimens were recorded during observation. List of ecological related species listed in Appendix 3. The estimated hook rates of each ERS are listed in Table 3.

Table 3. Hook rates of onboard observer on ecological related species

TRIP	No of hooks	MON	B3	BAR	BSH	BWL	CCB	CCL	CDF	CSK	DAS	FAL	HAR	LEC
1	22672	0.000	0.000	0.000	0.743	0.486	0.000	0.000	0.000	0.087	0.490	0.000	0.044	3.259
2	46528	0.197	0.151	0.066	2.179	0.845	0.000	0.022	0.130	0.668	0.734	0.541	0.235	3.780
3	44544	0.112	0.000	0.022	0.407	1.644	0.000	0.000	0.000	0.471	0.290	0.000	0.000	3.326
4	18006	0.231	0.000	0.000	0.173	0.000	0.000	0.000	0.058	0.634	0.980	0.000	0.000	2.089
5	42905	0.317	0.000	0.021	0.055	0.000	0.022	0.000	0.000	1.000	3.044	0.022	0.066	1.527
TRIP	No of hooks	LKV	MOX	MSO	NGA	OCS	OIL	RME	SPL	TCR	TSK	TST	WAH	
1	22672	0.044	0.000	0.000	5.123	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.098	
2	46528	0.000	0.021	0.000	6.014	0.085	0.086	0.000	0.022	0.325	0.131	0.000	0.043	
3	44544	0.000	0.000	0.000	2.971	0.000	0.156	0.000	0.000	0.494	0.000	0.000	0.357	
4	18006	0.000	0.000	0.000	1.563	0.058	0.288	0.058	0.000	0.461	0.000	1.275	0.519	
5	42905	0.000	0.022	0.028	4.896	0.000	0.000	0.000	0.000	0.022	0.000	0.168	0.261	

Research activities

Some annual research projects to strengthen scientific and technical basis of data base on tuna fisheries are activities that has been regularly improved since 2013. The project are as follows:

- Gut weight ratio based on onboard observer were carried out to measure the gut-loss aspects since early this year. Limited numbers of specimens are available and still being updated up to the next fishing seasons.

- Collecting SBT otolith in spawning ground is still the major activity to provide data base. This regular activity under supervised by CSIRO scientist.

- Collecting sample to support close kin analysis in collaboration with CSIRO-Australia were regularly carried out.

Acknowledgements

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Appendix 1.

Annual catches of SBT reported to CCSBT 2004-2015

Year	Total catch of SBT (tons) - Indonesia		
	Reported to CCSBT	National Fisheries Statistics	Catch estimate *
2004	633	665	613
2005	1,726	1,831	1,690
2006	598	747	558
2007	1,077	1,079	1,077
2008	926	891	905
2009	641	641	641
2010	496	474	580
2011	700	700	769
2012	910	910	817
2013	1,383	1,383	722
2014	1,137	1,137	1,187
2015	593	-	TBC

Catch by statistical area (2014 & 2015)

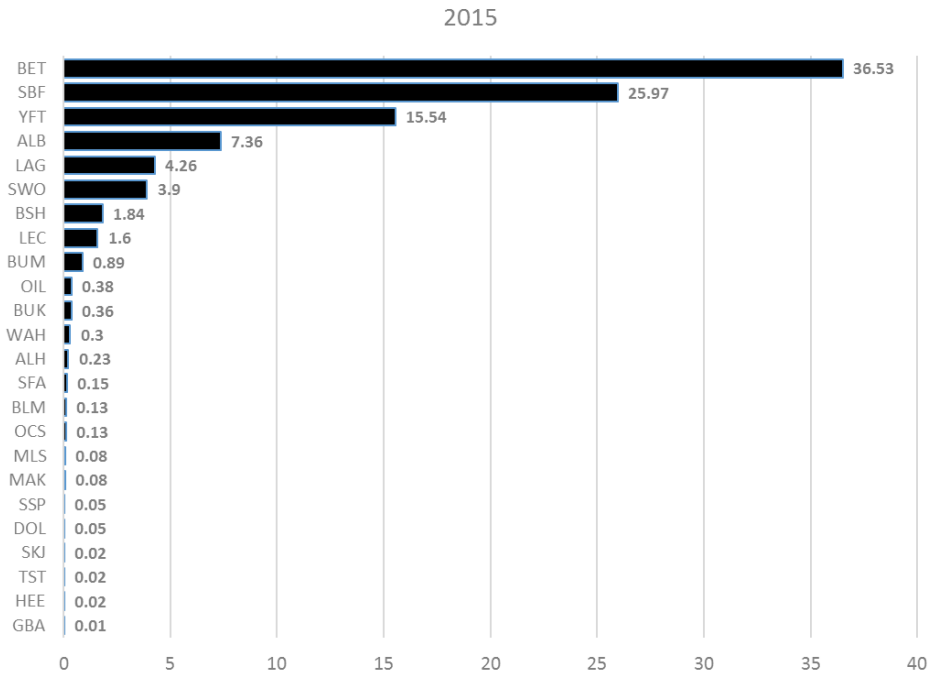
CCSBT STAT	HARVEST PERIOD	FV	Hk	n	total W (tons)	DATA	Max	Min	average	sd
AREA-1	JAN - DEC 2014	176	na	6531	705	W (kg)	269	15	93.8	37.20
						L (cmFL)	300	40	162.8	20.06
						Ww (kg)	309	17	108	42.78
AREA-2	MAR - OCT 2014	1	na	2032	121	W (kg)	139	14	51.5	23.13
						L (cmFL)	188	80	136.0	21.13
						Ww (kg)	160	16	59.3	26.60
AREA-8	JUNE - JULY 2014	1	na	113	5	W (kg)	80	26	36.1	11.32
						L (cmFL)	175	121	134.5	11.99
						Ww (kg)	92	30	42.0	13.02

Remarks : FV : Number active of fishing vessels
Hk : Number of total hooks
n : number of fish caught
na : not available

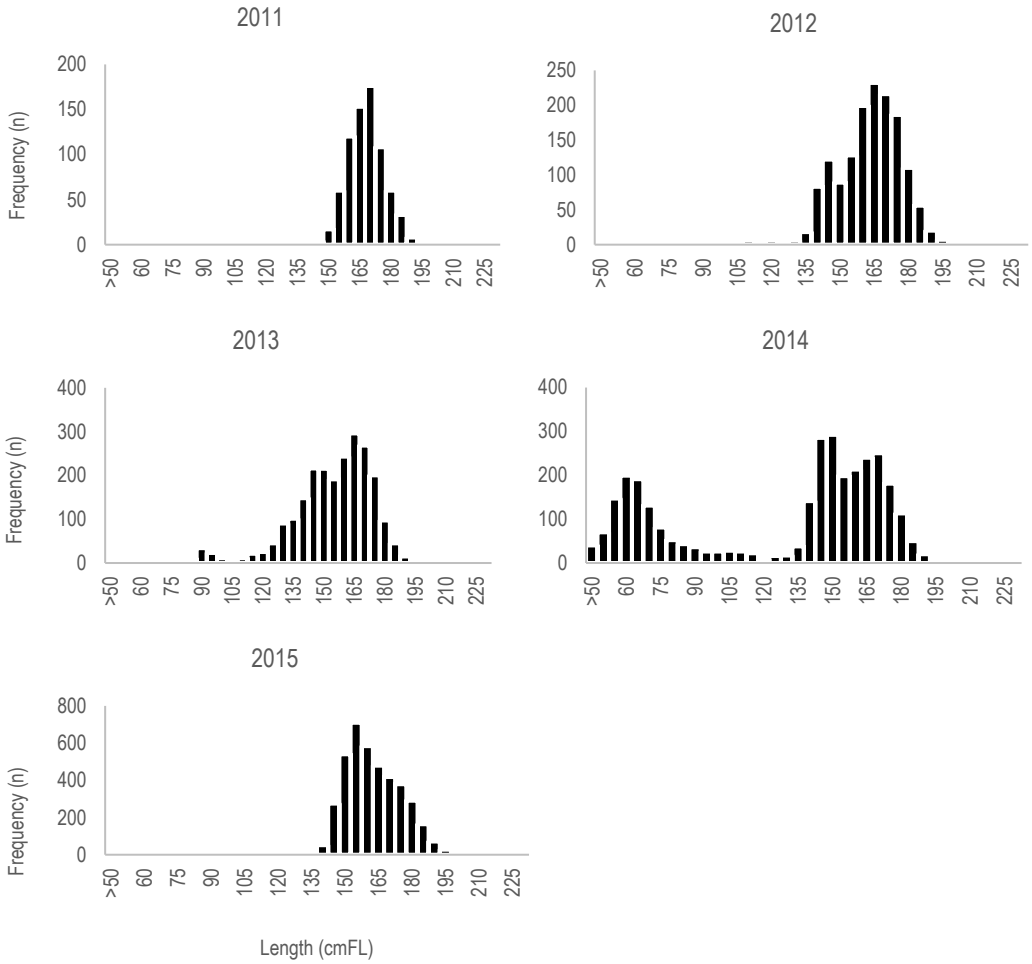
CCSBT STAT	HARVEST PERIOD	FV	Hk	n	total W (tons)	DATA	Max	Min	Average	sd
AREA -1	JAN - DEC 2015	114	na	5944	592.9	W	192	22	86.73	23
						L	270	70	166.53	21.3
						Ww	221	25.3	99.76	26.5

Appendix 2.

Catch composition of longline fishing vessel landed in Benoa 2015



Appendix 3. Length frequency distribution of all individual SBT during September 2011 to April 2015.



Appendix 4.

List of Ecologically Related Spesies 2005 – 2015 (Scientific observer)

Code	Species	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
B1	seagull	0	0	4	25	1	0	0	0	0	1	0
B2	white albatross	0	0	3	0	0	0	0	0	0	0	0
B3	black albatross	0	0	6	0	0	0	0	9	0	0	7
BAR	Baracuda	4	11	3	8	25	8	2	11	0	4	5
BSH	Blue shark	55	427	386	192	44	80	4	381	37	63	137
BTS	Bigeye Thresher shark	1	0	0	0	0	1	5	0	1	0	0
BWL	Pomfret	186	199	410	643	777	263	31	1	194	232	121
CCB	Spinner shark	0	9	30	6	10	0	0	1	4	17	1
CCL	Common Blacktip Shark	1	3	0	0	0	0	0	0	0	0	1
CCP	Sandbar Shark	5	0	0	0	0	0	0	0	0	0	0
CDF	Common dolphinfish	10	34	122	99	55	13	18	25	11	15	7
CSK	Crocodile shark	37	119	36	96	35	305	69	157	48	90	108
DAV	Pelagic stingray	142	643	390	607	1117	547	467	409	914	511	206
DKK	Leatherback turtle	0	1	0	0	0	0	1	0	0	0	0
DOL	Dolphin	1	5	0	2	0	0	1	0	0	0	0
EIL	Brilliant pomfret	0	0	0	0	1	0	2	16	5	0	0
FAL	Silky Shark	0	36	7	2	11	12	0	0	0	0	26
HAR	Long nose chimaeras	11	10	11	31	19	8	22	80	22	3	14
LEC	Escolar	0	0	0	0	0	72	4	1387	284	666	490
LKV	Olive ridley turtle	0	3	2	11	2	7	1	5	6	12	1
MON	Moon fish	8	28	109	34	18	28	51	971	51	29	30
MOX	Ocean Sunfish	0	4	5	55	31	9	2	9	11	3	2
MSK	Mako sharks (Lamnidae)	3	19	7	1	3	3	0	9	1	0	0
MSO	Mako sharks (*Isurus oxyrhynchus*)	0	1	28	15	9	1	0	2	2	2	1
MSP	Mako sharks (*Isurus paucus*)	1	1	4	11	7	0	0	1	0	0	0
NGA	Lancet Fish	400	1025	2009	1535	905	933	1184	1156	1738	921	739
OCS	Oceanic whitetip shark	0	2	14	4	10	14	7	4	2	8	4
OHR	Other Hair tail fish	1	0	280	81	27	17	0	0	1	0	0
OIL	Oilfish	117	636	592	480	348	274	135	65	7	58	16
RME	Devil Ray	0	2	1	0	1	1	0	0	0	1	1
RMJ	Manta ray,	0	1	0	3	1	0	0	0	1	1	0
SPL	Hammerhead sharks (*Sphyrna lewini*)	0	0	0	1	0	0	1	0	0	0	1
SPY	Hammerhead sharks (Sphyrnidae)	1	1	6	9	3	1	0	2	1	0	0
SPZ	Hammerhead sharks (*Sphyrna zygaena*)	0	0	3	0	3	0	0	0	0	0	0

SSD	Shortnose spurdog	9	35	63	34	22	0	0	0	0	0	0
SSH	Silky Shark	0	0	0	0	10	3	0	0	0	1	0
TCR	Pomfret	0	0	0	0	0	1	24	60	91	90	45
THR	Thresher sharks nei	6	4	1	1	18	1	0	0	0	0	0
TIG	Tiger shark	0	0	2	3	1	0	0	0	1	0	0
TRF	Tapper tail ribbon fish	0	0	0	0	3	0	2	35	3	1	0
TRT	Turtle	0	0	0	0	14	25	0	2	0	0	0
TSK	Thresher sharks (Alopiidae)	3	4	6	2	2	0	1	2	1	2	6
TSP	Thresher sharks (*Alopias pelagicus*)	1	8	5	5	0	0	0	3	1	0	0
TSS	Thresher sharks (*Alopias superciliosus*)	1	20	4	0	1	0	0	2	1	1	0
TST	Sickle pomfret	0	0	0	0	0	14	19	87	60	110	29
TTH	Hawksbill turtle	0	0	0	0	2	0	0	0	0	0	0
TTX	Marine turtles nei	0	3	3	0	0	0	0	0	0	0	0
TUG	Green turtle	0	1	0	0	4	0	0	0	0	0	0
WAH	wahoo	15	17	96	233	27	25	26	41	60	96	63

Appendix 5.

Annual activities of scientific observer based in Benoa Bali from 2005 to 2015

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	33208	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

Appendix 6.

Table 8. Total fishing and observed effort, year, fishery and strata in 2015

Country/ Fishing Entity	Calendar Year	Fishery		CCSBT Statistical Area	Species (*or group*)	Observed Captured (*number*)	Observed Capture Rate	Observed Mortalities (*number*)	Observed Mortality Rate	Observed Live Releases	Est. number of mortalities
		Gear Code	Fleet Code								
ID	2015	LL	IDD	1	DAV	206	1.179	205	1.174	1	
ID	2015	LL	IDD	1	NGA	739	4.231	739	4.231	0	
ID	2015	LL	IDD	1	SBF	12	0.069	12	0.069	0	
ID	2015	LL	IDD	1	HAR	14	0.080	14	0.080	0	
ID	2015	LL	IDD	1	LKV	1	0.006	1	0.006	0	
ID	2015	LL	IDD	1	MOX	2	0.011	1	0.006	1	
ID	2015	LL	IDD	1	TRF	0	0.000	0	0.000	0	
ID	2015	LL	IDD	1	MON	30	0.172	30	0.172	0	
ID	2015	LL	IDD	1	CSK	108	0.618	108	0.618	0	
ID	2015	LL	IDD	1	LEC	490	2.806	489	2.800	1	

Remarks:

COD	COMMON NAMES	Species
DAV	Pelagic stingray	*Dasyatis violacea*
NGA	Lancet fish	*Alepisaurus sp*
SBF	Southern bluefin tuna	*Thunnus maccoyii*
HAR	Longnose chimaeras	*Harriotta spp*

MOX	Ocean sunfish	*Mola mola*
TRF	Tappertail ribbon fish	*Trachipterus fukuzakii*
MON	Moon fish	*Lampris guttatus*
CSK	Crocodile shark	*Pseudocarcharias kamoharai*
LEC	Escolar	*Lepidocybium flavobrunneum*