

INDONESIA SOUTHERN BLUEFIN TUNA FISHERIES ¹

A National Report Year 2011

Prepared by

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1. Summary

The number of registered tuna longliners in the port of Benoa (Bali) that mainly target tuna was 757. Indonesia longliners registered in CCSBT was 187. Those fishing boats vary in size from 23-594 GT. About 85% of Indonesia's catch of SBT is landed in the port of Benoa. Based on CDS Report from Bali and Jakarta showed that the catch of SBT in 2011 was 672 mt. The result of estimation on the basis of data from Benoa catch monitoring SBT was 432 t. Monitoring of fish size landed in Benoa revealed that size distribution of SBT mainly was range from 160 cm to 180 cm of FL with mean length at about 169 cm, there was no significance change of the mean length of SBT in 2010-2012 compare to the length of SBT in 2002/03, this has fluctuated between 168 and 171 cm FL. The nominal CPUE 2005-2012 showed higher catch rates in the temperate regions. The average hook rate was 0.1 per 1000 hooks. A higher hook rate of SBT in 2011 occurred on October, November for 0,1-0,3 per 1000 hooks. Lower hook rate occurred on April to August 0-0,01 per 1000 hooks. Indonesia and Australia (CSIRO) is continuing to work together to provide age composition data (based on direct ageing using otoliths) and close kin analysis. Scientific observer program activities in 2011 cover 210 days at sea, and up to July 2012 the observer coverage up to 283 days with average 56 days at sea

2. Introduction

Southern Bluefin Tuna (*Thunnus maccoyii*, SBT) is one of the important tuna species caught seasonally by the tuna longliners in southern of Java, Indonesia. The number of

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registered tuna longliners in 2012 in Benoa Port was 757 that mainly targeting tuna (Station of Marine And Fisheries Resources Surveillance- Benoa 2011) . Indonesia longliners registered in CCSBT was 187. Those fishing boats vary in size from 23-594 GT (http://www.ccsbt.org/site/authorised_vessels.php). There are several main landing sites in Indonesia for tuna longliner operating in the Indian Ocean that is Muara Baru Jakarta, Cilacap, Bungus Padang, , Palabuhan Ratu and Benoa Bali. Mostly SBT are landed in Benoa port, Bali that recorded about 85 % from the total catch of SBT in Indonesia. This report provides information of SBT landed mainly in Benoa port through enumerator and scientific observer data.

3. Data Source

There are two sources of data collection available for SBT that is tuna catch monitoring by enumerators and Scientific Observers in Benoa (2005- July 2012), Catch Documentation Scheme (CDS) data (2011) and Capture Fisheries Statistics of Indonesia (2004-2010).

4. Fleet size and distribution

In 2012 the Indonesian registered tuna longliner fishing vessel for SBT fisheries consisted of 187 vessels and accounting for a total of around 19,185 GT with size range from 23 to 594 GT. Most of fishing vessels (44.2%) were between 50-100 GT and 4.5% of more than 200 GT. The fleet size distribution and total effort registered fishing vessels are shown figure 1.

5. Catch and Effort

The annual catches of SBT were about 633 mt (metric ton) in 2004 and has significantly increase in 2005 for about 1,700 mt, dropped again to just below 600 mt in 2006. The catches of SBT since 2007 were steady decrease from 1,077 mt to 496 mt in 2010 and increase up to 672 mt in 2011 (table 1). The number of vessels that landed SBT in Benoa during (2011) fluctuated by month (Figure 3). Catch of SBT during 2008-2011 showed a similar pattern. High catch generally occur during October to March coinciding with the west monsoon season. The highest catch in 2011 occurred in October and steady decrease to the December 2011, nevertheless catch in January and February showed much lower compare to the catch from previous year (figure 5), This is explained why SBT being more abundant on the fishing grounds and being a more significant proportion of the overall tuna catch during the SBT spawning season, which is generally September – March

6. Nominal CPUE

Spatial distribution of nominal catch rates for SBT is shown in Figure 6. SBT had higher catch rates in the temperate regions. The maximum SBT catch rates (1-2 fish per 1000 hooks) occurred within 2 squares between 25°-35°S and 100°-105°E, whilst in other 5-degree blocks SBT catch rates were <1 fish per 1000 hooks, and even zero for several fished squares (Figure 6).

7. Hook rate

Scientific observer program has been started since 2005 based at Benoa port and still continuing. The average of hook rate was 0,4 per 1000 hooks in 2005 with a decreasing trend through year up to 0.02 per 1000 hooks in 2010, with slightly increase to 0,1 per 1000 hooks in 2011 (Figure 7). A higher hook rate of SBT occurred on October, November for 0,1-0,3 per 1000 hooks. Lower hook rate occurred on April to August 0-0,01 per 1000 hooks (Figure 8).

8. Size distribution

Port sampling program is continuing conducted at port Benoa including measurement of SBT, in 2011 the port sampling were sampled a total of 1739 individual and weighed. From those samples, fish fork lengths were measured to the nearest centimeter and weighed to the nearest kilograms for 748 individuals. The size frequency measurements of SBT during period of September 2011 to April 2012 were range from 136 cm to 212 cm in length (FL). Farley *et. al.* (2010) reported that the mean of the size distribution declined from 188.1 to 166.8 cm between 1993/1994 and 2002/03, and fluctuated between 168.3 and 171.0 cm. From the port sampling program in Benoa in 2011-2012 showed main proportion of the catch was range from 160 cm to 180 cm of FL with mean length at about 169 cm. This indicates that there was no significance change of the mean length of SBT in 2011-2012 compare to the length of SBT in 2002/03. From previous study the length at first maturity were range from 155-164 cm FL and the catch in 2011 showed that more than 50 % SBT caught as mature fish. Proportion and size distribution between male and females of SBT was relatively proportional (Figure 10).

The annual trend of fish size landed in Benoa port, Bali revealed that the mean size of SBT landed steady decrease through year from 182 cm FL in the 90's to 169 cm FL in 2007 (Figure 11). The mean size of SBT showed a relatively stable from 2008 to 2011 at about 175 cm FL.

Decreasing trend hook rate of SBT occurred from 2005 to 2008 and stable until 2010 and showing slightly increase in 2011 (Figure 12). This might indicate a better stock of SBT in recent years.

9. Scientific Observer

The scientific observer activities were recorded since 2005 until early 2010. The number of scientific observer was decrease from 6 person in 2007 become 5 person in 2008. The average day sea /trip was vary from 20 d/trip to 50 d/trip thus the total day at sea also vary from 150 days to 758 days /total number (Table 3). As reported in the 2010 in CCSBT – ESC/1009/SBT FISHERIES the coverage of scientific observer program was decline in number, days at sea and area coverage. Updating information for scientific observer program end of 2011 the days at sea was 210 d (Table 3) observer coverage in 2012, up to July 2012 the days at sea was 270 d , it is predicted that in 2012 scientific observer coverage will have better coverage than previous year. Indonesia and Australia is continuing to work together to provide age composition data (based on direct ageing using otoliths).

10. Acknowledgements

We acknowledge the support of scientific enumerators and observers in Research institute for tuna Fisheries Benoa Bali for their significant work and data contribution for this report. We also thanks to ACIAR, CSIRO, IOTC and OFCF that had significant role and contribution in establishing port sampling and scientific observer based in Benoa. The cooperation of the Directorate Fisheries and Resource Management (DFRM) - Directorate General for Capture Fisheries DGCF for national fisheries data and the Directorate General Surveillance for marine and fisheries resources. We also thank to Craig Proctor (CSIRO) for his supervision on sampling activities, comment and contribution and particularly thanks to Prof Dr. Wudianto for his valuable comment and contribution to this report.

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Appendix.

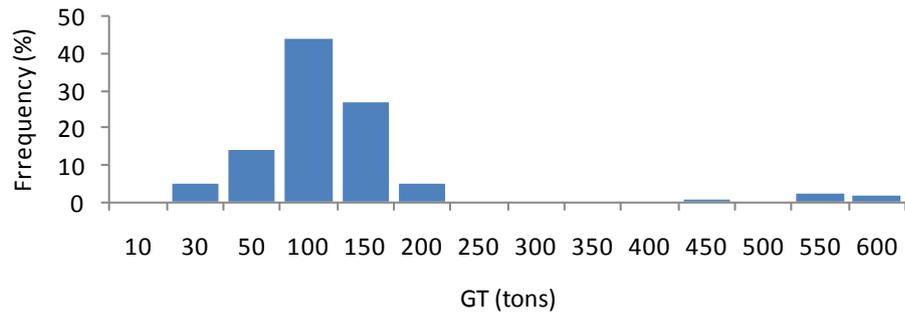


Figure 1. Fleet size distribution of tuna longline

Source : http://www.ccsbt.org/site/authorised_vessels.php

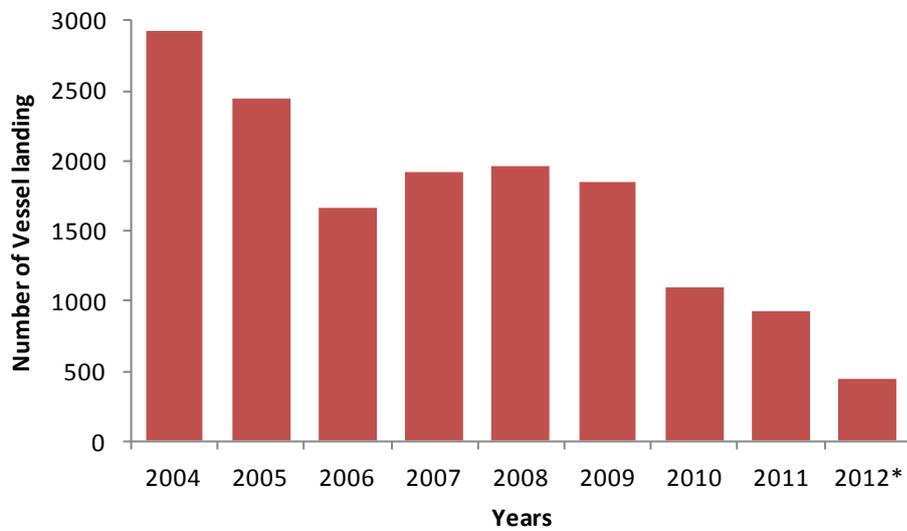


Figure 2. Number of Tuna Longliner landing at Benoa Fishing Port (RITF 2012)

Table 1. Annual catches of SBT reported to CCSBT 2004-2011

Year	Indonesia total catch of SBT (tons)			Quota
	Reported to CCSBT	National Fisheries Statistics	Catch estimate *	
2004	633	665	613	
2005	1726	1831	1690	
2006	598	747	558	800
2007	1077	1079	1077	800
2008	926	891	905	750
2009	641	641	746	750
2010	496	474	566	651
2011	672	**	432	651
2012	NA	NA	NA	685
2013	NA	NA	NA	707
2014	NA	NA	NA	750

Note:

1. Catch estimate * was based on port sampling activities landed only in Benoa port by RITF.
2. ** not available in the process of data validating.

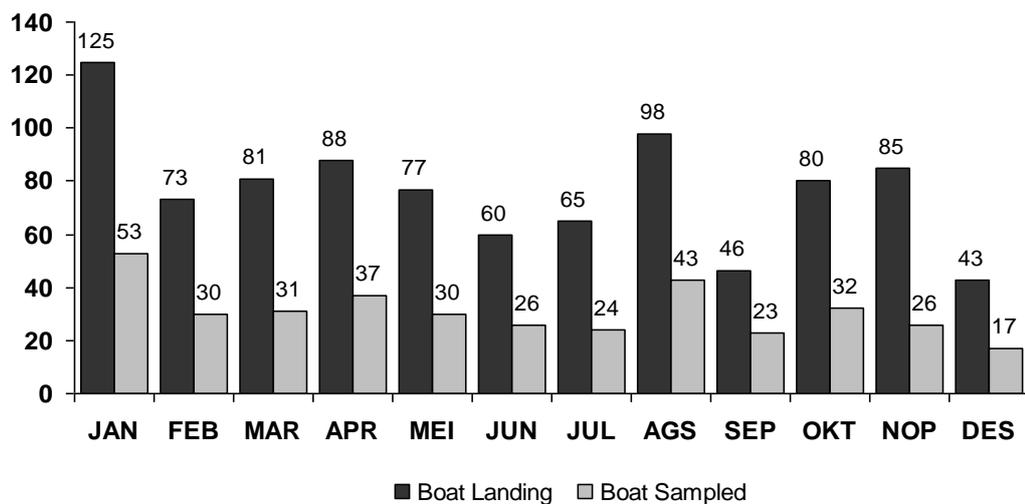


Figure 3. Monthly boat landings and sampling activities in 2011.

Table 2. Indonesia Monthly Catch Report of SBT (January- December 2011) under CDS Scheme (DRFM-DGCF 2012)

Month	Total		Bali-Benoa		Jakarta	
	Number	Weights (Kg)	Number	Weights (Kg)	Number	Weights (Kg)
January 2011	562	59,853	561	59,747	1	106
February 2011	561	53,225	554	52,577	7	648
March 2011	1,037	83,890	983	80,098	54	3,792
April 2011	999	67,567	981	66,902	18	665
May 2011	1,130	54,121	889	47,036	241	7,085
June 2011	582	14,747	96	3,917	486	10,830
July 2011	1,630	56,509	559	32,909	1071	23,600
August 2011	1,556	52,509	255	17,807	1301	34,702
September 2011	634	54,431	632	54,279	2	152
October 2011	871	86,610	871	86,610	-	-
November 2011	346	34,908	346	34,908	-	-
December 2011	939	54,319	413	40,849	526	13,470
TOTAL	10,847	672,689	7,140	577,639	3,707	95,050

Note:

- The data would be update in the near future
- The catch of SBT of 2011 is temporary figure
- The catch monthly report is similar with total catch SBT

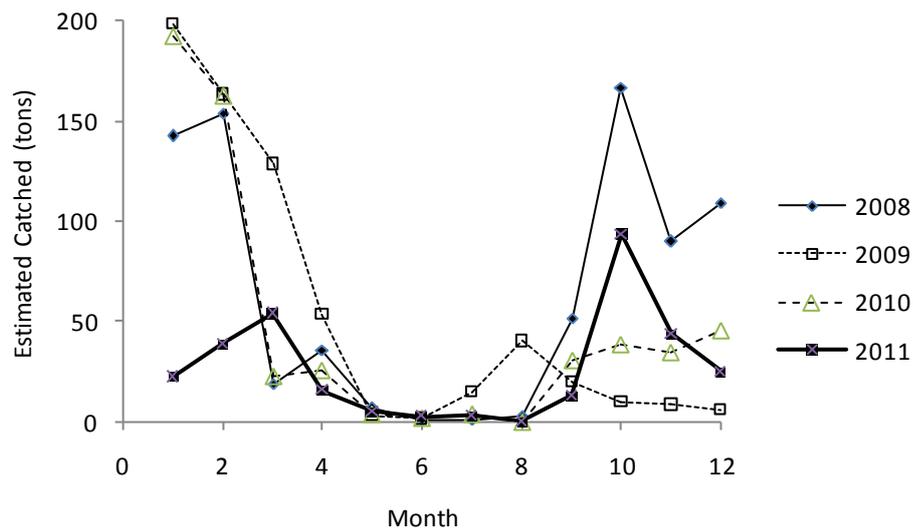


Figure 4. Monthly catch of SBT landed in Benoa in 2008-2011

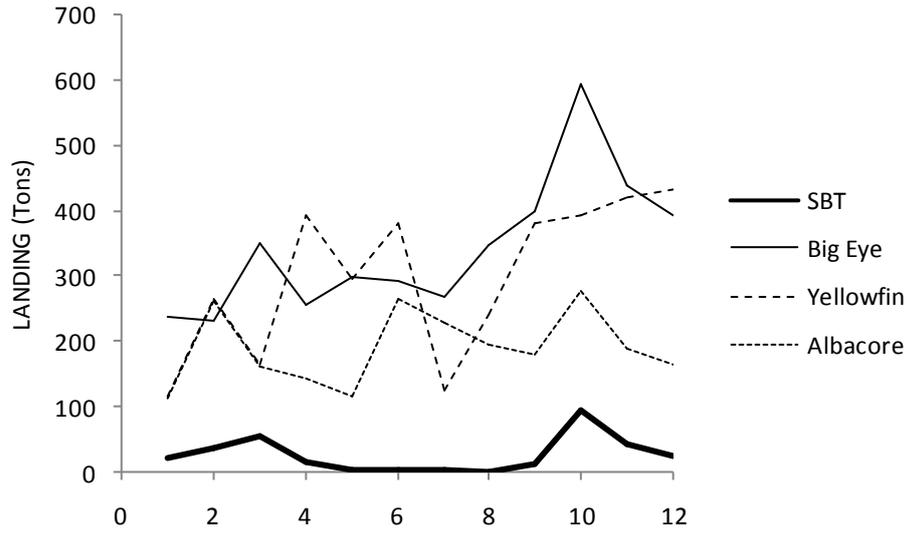


Figure 5 Monthly landing of SBT and other tuna species caught by Tuna longliners in 2011 (ATLI 2011)

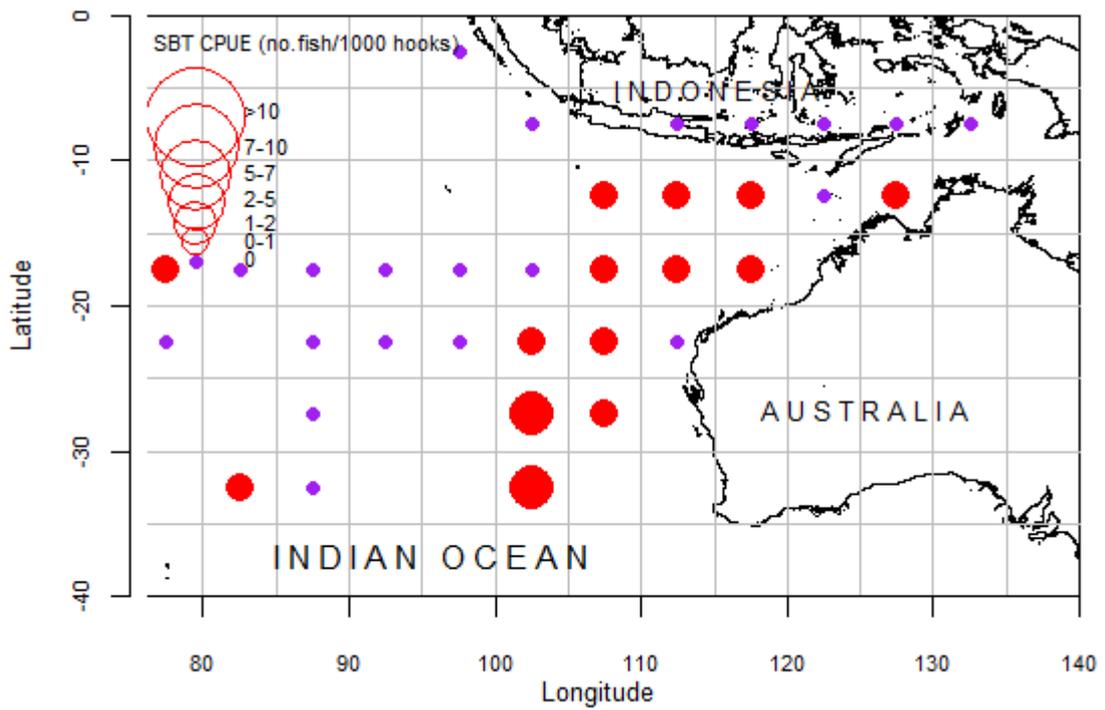


Figure 6. Spatial distribution of nominal CPUEs (no.fish/1000 hooks) for SBT recorded by Bena Observer, aggregated from 2005 to 2012 (July) (RCFMC-RITF)

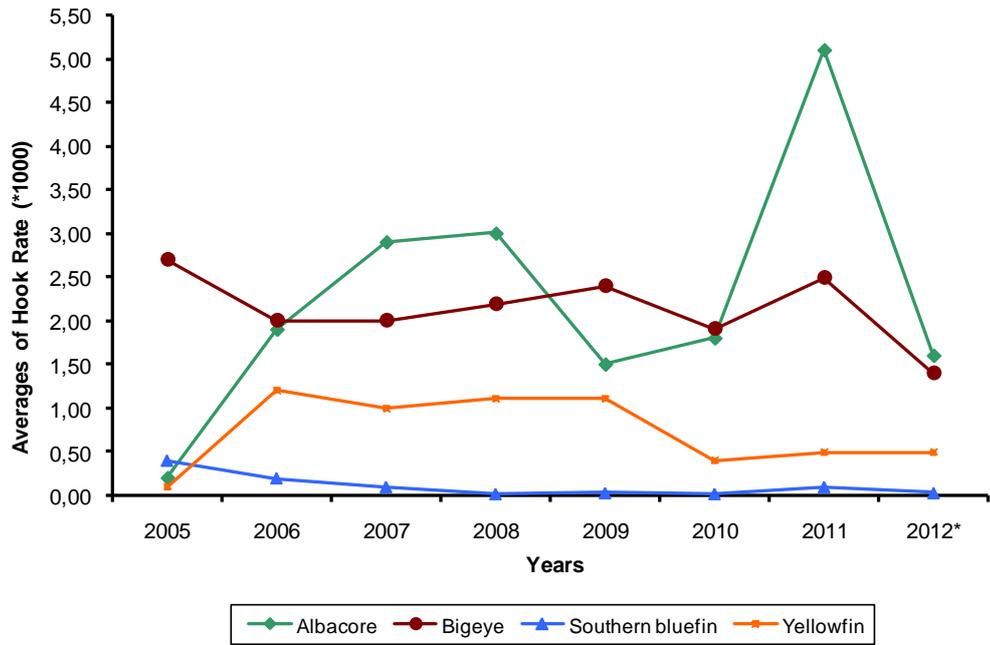


Figure 7. Fluctuation of average hook rate for tuna (SBT, YFT, BET, ALB) based on scientific observer program in the Indian Ocean. 2011

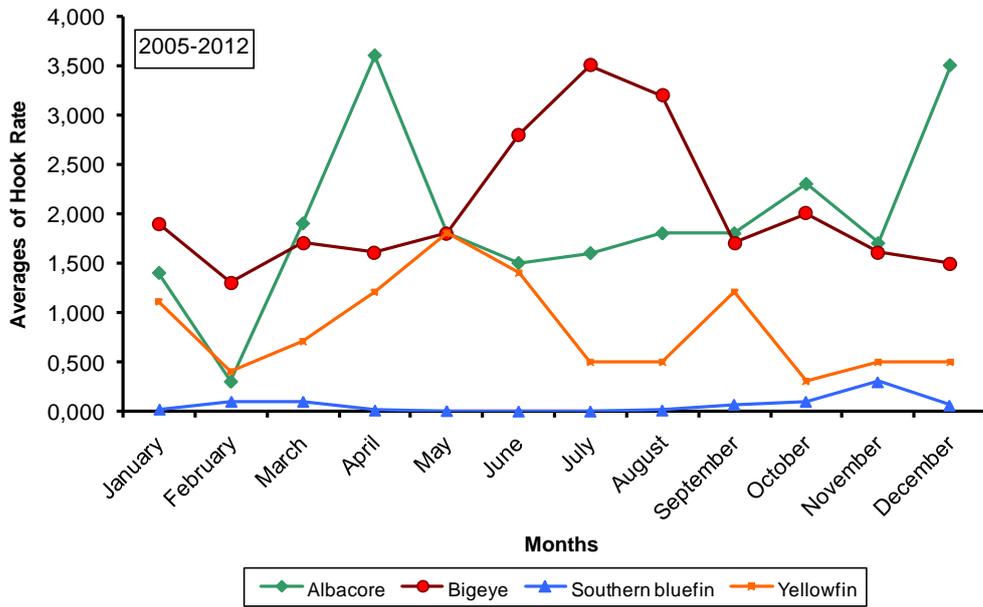


Figure 8. Average hook rate by month for SBT, YFT and BET based on scientific observer Program data.

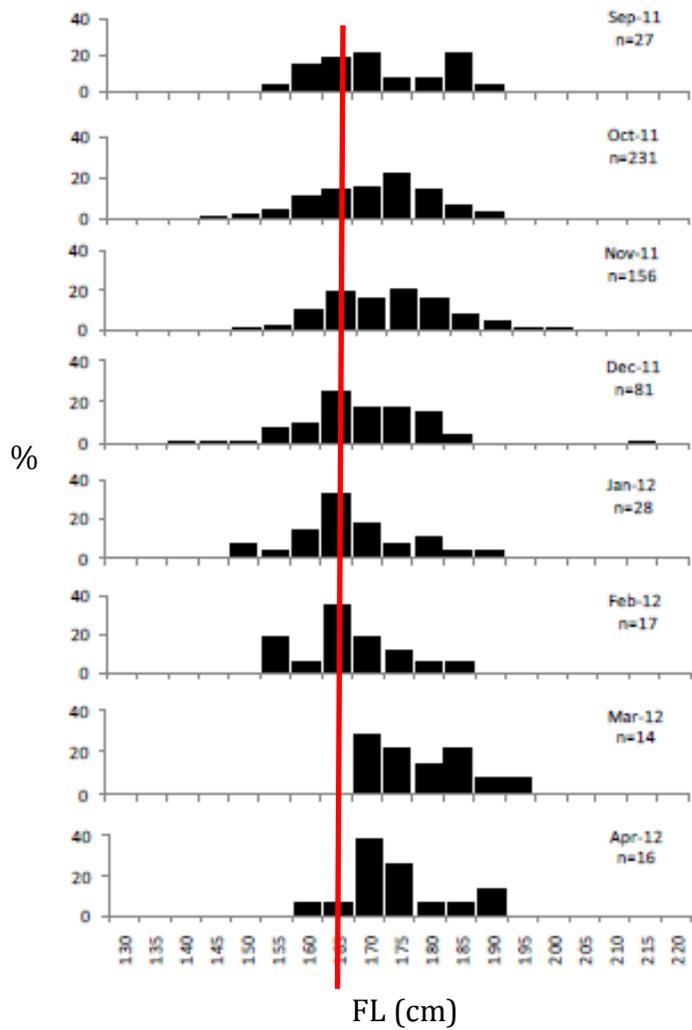


Figure 9. Updated Length frequency on SBT landed in Benoa September 2011-April 2012 (red solid line indicates length at first maturity, Lm)

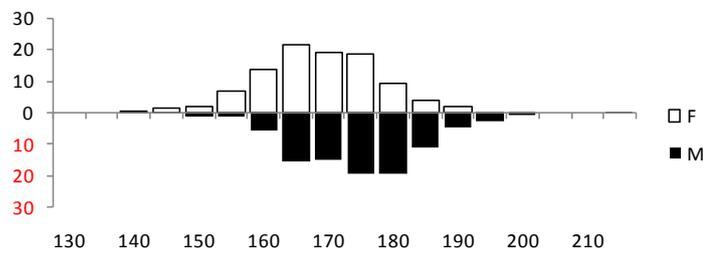


Figure 10 Length frequency distribution of landed SBT during observation September 2011- April 2012 in Benoa. with sex discrimination

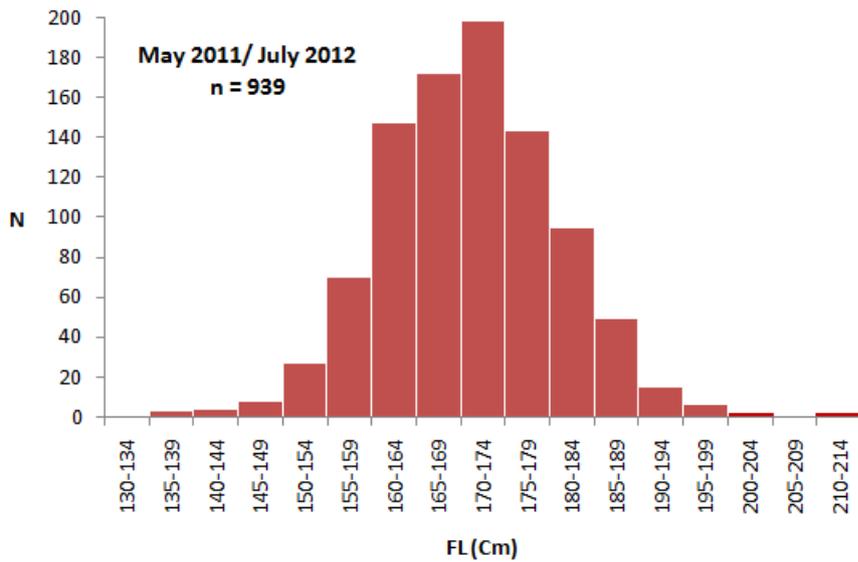


Figure 11 . Length frequency distribution of SBT during May 2011 – July 2012

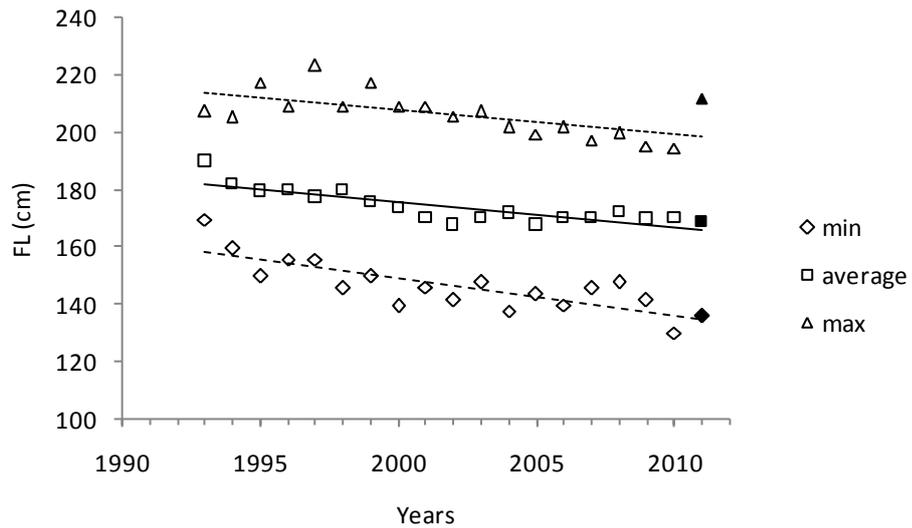


Figure 11. Updated Annual trend of average size of SBT landed in Benoa during September 2011-April 2012

Table 3. Updated The annual activities of scientific observer based in Benoa Bali in 2011 and 2012 (June)

YEAR	No. of Obs	No. of trips	No. of Comp	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 (July)	6	5	4	283	30-83	56