Review of Taiwan's SBT Fishery of 2010/2011

1. Introduction

Taiwan has been fishing for southern bluefin tuna (SBT) since 1970s. The SBT is being caught partly by seasonal target vessels and partly by albacore targeting vessels as by-catch. Seasonal target vessels are mainly conducted by longliners equipped with super-low temperature freezers, in two high seasons, i.e. one from June to September in the waters of 20°S-40°S in the central Indian Ocean, and the other from November to February of the following year in the waters around 35°S-45°S off the southeast coast of Africa. However, no year-round target SBT fishing has been conducted. The annual catch in 2010 was 1,140 mt for quota year (from 1 April 2010 to 31 March 2011), and 1,208 mt for calendar year. Taiwan's SBT quota for the 2010 and 2011 fishing season was 1,718 mt. Therefore, the remainder quota of Taiwan is 578 mt in 2011 fishing season. Table 1 shows the annual catches of SBT by gear from 1972 to 2010.

2. Operational Constraints on Effort

Regulatory Measures

Taiwan has become a member of the Extended Commission of CCSBT since 2002, and has been allocated annual SBT allocation as 1,140 mt. For the purpose of managing and controlling its quota, fishing vessels have been separated as seasonal target vessel and by-catch vessel. Every vessel shall be permitted by government every year. Individual quota has been allocated to each of seasonal target SBT vessels, and partial quota has been reserved for by-catch vessels. The dynamic quota balancing mechanism has been established since 2002. Any unused quota for which seasonal target vessels changed their fishing schedule and failed to get to fishing ground in time as our regulation required or cannot use up their quota, would be reviewed and the quota would be reallocated to those vessels which still fished in the fishing ground and needed more quota. By-catch vessels are allowed to have a maximum of 1 ton SBT by-catch per vessel.

In order to collect SBT catch information in a timely manner so as to monitor the total

SBT catch not to exceed the catch limit, since 1996, every vessel caught SBT shall submit weekly report on its catch of SBT by weight as well as its fishing location to the fisheries authorities. This system was refined in 2002 to obtain more accurate catch information, including the length measurement of each SBT caught.

Since June 2000, Taiwan had implemented Trade Information Scheme (TIS) for the export of SBT in accordance with the resolution adopted by CCSBT. According to the regulation, all SBT export shall be accompanied by CCSBT statistical document validated by officials of Fisheries Agency of Taiwan. Besides, Taiwan has imposed the CCSBT Catch Documentation Scheme (CDS) since 1 January 2010 for replacing TIS. Any SBT caught shall be attached an SBT tag, measured for its weight and length, and recorded in a Catch Tagging Form. All SBT export, whether landing at domestic port/ foreign port, or transshipment at sea/ at foreign port shall be accompanied by a Catch Monitoring Form.

Since 2002, all vessels fishing for SBT have been required to install satellite-based Vessel Monitoring System (VMS) for transmitting the positions of vessels to the fisheries monitoring center in a timely manner. Fishing in the spawning area of SBT has been prohibited and SBT statistical document/ CDS will not be validated for any fish caught from the spawning area so as to protect the spawning stock.

According to the resolution on establishing a program for transshipment by large scale fishing vessels adopted by the CCSBT in 2008, Taiwan has conducted at sea transshipment program since 1 April 2009. Taiwan has joined IOTC and ICCAT regional observer program. Any vessel authorized to fish for SBT and to transship SBT at sea shall carry an IOTC or ICCAT observer on board of carrier vessel during each transshipment operation in the Convention area of IOTC or ICCAT.

3. Catch and Effort

- All sources of mortality (e.g. discards together with discard fate [live/dead] and recreational fishing) should be included

The annual catch of 2010 quota year was 1,140 mt caught by 82 active vessels, including 65 seasonal target vessels and 17 by-catch vessels. Six dead SBT were discarded and no size/weight data is available.

Considering the catch record of weekly report and CDS was measured at sea, the high waves in southern Indian Ocean may affect the accuracy of measurement. In accordance with our regulation, fishers shall submit the invoice to Fisheries Agency after sale. According to the record we received, for 2010 fishing season, the whole weight of landing was 1,140 tons for quota year and 1,208 tons for calendar year. The annual catch of SBT by gear from 1972 to 2010 is shown in Table 1.

Due to increasing threat of Somalia piracy, in 2010 partial vessels operating in northern Indian Ocean were permitted to move to southern Indian Ocean to target temperate tuna and tuna-like species. Therefore, the number of vessels permitted to fish for SBT increased from 67 in 2009 to 82 in 2010 fishing season. Table 2 shows the number of active vessels fishing for SBT during 2002-2010 quota years.

4. Historical Catch and Effort

In the early 1980s, the annual catch of SBT was relatively small, with a catch of less than 250 mt. Following the expansion of tuna long-line fleet and exploitation of fishing grounds, there has been a prominent increase in the annual catches. A significant increase in the annual catch of SBT was observed from 1989 to 1992, with a record catch exceeding 1,300 mt, 1/4 of which was from drift net fishery. Following the prohibition of drift-net fishery on the high seas in 1993 in compliance with the United Nations General Assembly Resolution 46/215 calling for global moratorium on all large-scale pelagic drift-net fishing on the high seas of the world’s oceans and seas by 31 December 1992, then SBT was only caught by longliner. The annual catch fluctuated between 840 and 1,600 mt during the last decade (Table 1).

5. Annual Fleet Size and Distribution

In 2010 quota year, there were 82 longline vessels fishing for SBT, among which 65 seasonally targeted SBT and 17 by-caught SBT. The fishing grounds were mainly in the waters of 25°S - 40°S, seasonally distributed in the southern and central Indian Ocean from April to September, and in the southwestern Indian Ocean extending to the eastern boundary of the Atlantic Ocean from November to February of the following year. About 81.38% of the Taiwanese SBT catch occurred in the southern

and central Indian Ocean, about 17.74% distributed in water off the southeast coast of Africa, and about 0.88% sporadically by-caught by vessels operating in the southern Pacific or Atlantic Ocean. The catch distribution of 2007-2010 was mapped in Figure 1.

6. Historical Fleet Size and Distribution

Following the prohibition of drift-net fishing in 1993, SBT was caught only by longline fishery in the three oceans, but mainly in the Indian Ocean. According to the weekly report and trade information, there were more than 100 vessels fishing for SBT during 1998-2001. The number of active vessels fishing for SBT from 2002 to 2010 was shown as Table 2. Since 2005, partial vessels shifted to target oilfish in southern and western Indian Ocean so that the number of vessels fishing for SBT decreased significantly. Since 2009, due to increasing threat of Somalia piracy, some vessels move to southern Indian Ocean so that SBT active vessels increased.

7. Fisheries Monitoring

Intensive efforts have been continuously exerted for monitoring the SBT fishery through the following measures:

I. Weekly report for SBT catch is required for submission to Fisheries Agency through Taiwan Tuna Association. From 2002, provision of such information as daily catch, daily fishing location and daily discards is required in the weekly report when applying for SBT statistical document. Since 1 January 2010, the CCSBT SBT statistical document was replaced by CCSBT CDS. When fishers apply for validation on CDS, the officials authorized by Fisheries Agency of Taiwan shall check all of the above information consistent with the real catch.

II. Taiwan has designated two foreign ports (Port Louis and Cape Town) for SBT transshipment of its flagged vessels since March 2010 and has prohibited transshipment at other foreign ports. Government officials stationed at Port Louis and Cape Town are responsible for supervising all SBT catch and sampling inspection. Any transshipment in ports without supervision and sampling inspection by its officials shall not obtain validated catch document.

III. In case of transshipment at sea, regional observer of IOTC, ICCAT boarding on carrier vessel shall observe if all of SBT transshipped quantities consistent with the reported catch in the transshipment declaration since 1 April 2009.

IV. As for catch unloading at port in Taiwan by carrier vessels, containers or fishing vessels, officials of Fisheries Agency of Taiwan shall supervise all of SBT catch and sampling inspect the catch. Only for those catch are verified, the officials of Fisheries Agency of Taiwan shall validate catch documents.

V. Besides, catch data were also verified by scientific observers on board. The coverage rate was all above 10% in terms of effort from 2005 to 2007 and 2009 to 2010. In 2008, due to high fuel price, fishing vessels reduced visiting ports and meeting with carrier vessels, thus it is difficult to dispatch observer onboard, so that the observer coverage rate by effort was 6.65%. In 2010 quota year, 7 scientific observers were deployed on 11 fishing vessels. The observer coverage rate by efforts was about 11.95%. (Table3)

VI. In addition to catch data, observers also collect and record ecologically related species (ERS) data, such as sea birds, sea turtles, marine mammals, and sharks data. Besides, mitigation measures adopted by fishing vessels shall be recorded.

VII. Patrol boats were also dispatched to inspect Taiwanese fishing vessels operating in three oceans. In 2008, 2 SBT fishing vessels were boarded and inspected by patrol boat. It accounts for 4.9% of Taiwanese SBT fishing vessels. In 2009, 5 SBT fishing vessels were boarded and inspected. It accounts for 7.5% of Taiwanese SBT fishing vessels. In 2010, due to the threat of Somalia piracy, for safety consideration, no patrol boat was dispatched in Indian Ocean.

VIII. There are penalties for over catch in excess of 10% of the individual quota, or transshipment/ unloading catch at any other non-designated foreign ports.

IX. Since April 2002, vessels authorized to fish for SBT are required to install VMS equipments in order to monitor the positions of the vessels.

X. Considering catch data measured at sea, waves may cause deviation of weight. Fishers shall submit sales record validated by verification firm after the first sale of SBT to Fisheries Agency for further verification of catch statistics.

8. Other Factors

In 2010 quota year, about 80.45% of SBT catch were exported among which 79.9% exported to Japan and 0.55% exported to South Africa and Mauritius. For the purpose of promotion, since 2006 Fisheries Agency of Taiwan has required industries to send back partial catch to Taiwan for domestic consumption. In 2010 quota year, the amount of domestic consumption was approximated as 19.55%.

Table 4 shows the information of incidental catches of seabirds, and sea turtles, along with by-catch of shark species recorded by observers deployed on SBT vessels in 2010 fishing season.

Table 1. Annual SBT catches by Taiwanese deep-sea longline and drift net fisheries during 1972-2010. Unit: MT

Calendar Year	Catch		Quota year	Catch	
	Deep-Sea Longline	Drift Net		Deep-Sea Longline	Drift Net
1972	70		1972	70	
1973	90		1973	90	
1974	100		1974	100	
1975	15		1975	15	
1976	15		1976	15	
1977	5		1977	5	
1978	80		1978	80	
1979	53		1979	53	
1980	64		1980	64	
1981	92		1981	92	
1982	171	11	1982	171	11
1983	149	12	1983	149	12
1984	244	0	1984	244	0
1985	174	67	1985	174	67
1986	433	81	1986	433	81
1987	623	87	1987	623	87
1988	622	234	1988	622	234
1989	1,076	319	1989	1,076	319
1990	872	305	1990	872	305
1991	1,353	107	1991	1,353	107
1992	1,219	3	1992	1,219	3
1993	958		1993	958	
1994	1,020		1994	1,020	
1995	1,431		1995	1,431	
1996	1,467		1996	1,467	
1997	872		1997	872	
1998	1,446		1998	1,446	
1999	1,513		1999	1,513	
2000	1,448		2000	1,448	
2001	1,580		2001	1,580	
2002	1,137		2002	1,137	
2003	1,128		2003	1,128	
2004	1,298		2004	1,298	
2005	941		2005	941	
2006	846		2006	846	
2007[1]	841		2007[1]	823	
2008	913		2008	926	
2009	921		2009	949	
2010	1208*		2010	1140*	

*landed weight

[1] Since 2007, Taiwan changes its quota year from calendar year (1 January-31 December) to 1 April -31 March.

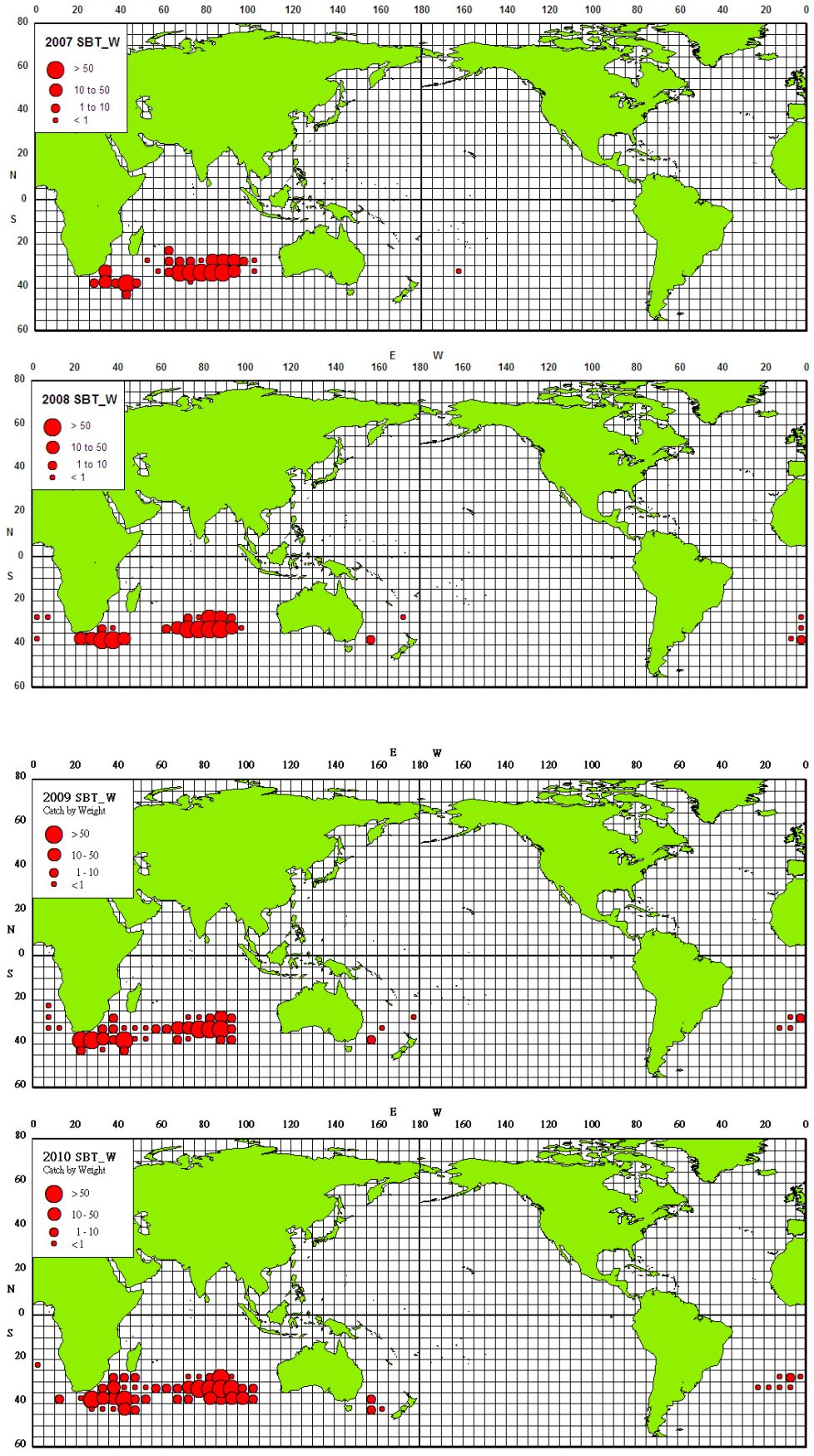

Fig 1. The SBT catch distribution of Taiwanese longline fishery during 2007-2010 calendar years (Data of year 2010 is preliminary and may be revised.)

Table 2. The number of active vessels fishing for SBT during 2002-2010 quota years

Year	No. of seasonal target vessels	No. of by-catch vessels	Total vessels
2002	21	50	71
2003	76	24	100
2004	79	18	97
2005	49	8	57
2006	33	3	36
2007*	27	3	30
2008	35	6	41
2009	34	33	67
2010	65	17	82

*Since 2007, Taiwan changes its quota year (1 April - 31 March) from calendar year (1 January - 31 December).

Table 3. Summary of results for scientific observer programs during 2002-2010.

Year	Observers Deployed	Observed Trips	Sea Days	Set Observed	Observer Vessels (%)	Observed Effort (%)	Observed Catch (%)
2002	1	1	202	126	4.76	6.57	1.44
2003	2	2	177	133	2.63	2.43	0.86
2004	3	5	263	165	3.8	4.17	3.10
2005	4	4	681	444	8.16	11.57	9.62
2006	3	3	296	253	9.09	10.46	6.08
2007	4	4	441	394	14.81	14.84	13.72
2008	2	2	252	227	5.71	6.65	3.63
2009*	5	6	531	457	18.18	15.01	12.75
2010*	7	11	964	927	16.67	11.95	8.35

*Data from 2009 was for quota year.

Table 4. Summary of observed ERS mortality by observers deployed on SBT vessels in 2010 quota year

Item \ Year	2010*
Total effort (hooks)	19,938,213
Observed effort (hooks)	2,383,058
Percentage of hooks observed	11.95%
Total number of observed seabird interactions (mortality)	9(18)
Total number of observed shark interactions(mortality)	(726)
Total number of observed sea turtle interactions (mortality)	1(0)