

## **National Report of Taiwan for Ecologically Related Species in 2006-2008**

### **Fisheries Agency of Taiwan**

#### **1. Introduction**

Southern Bluefin Tuna (*Thunnus maccoyii*, SBT) was bycatch of Taiwan tuna longline fishery targeting albacore in the past, but after the fishing vessels equipped with deep-frozen freezers and some fishing vessels operating in the Indian Ocean started targeting SBT seasonally since 1990s. Because of limitation of vessel designing, most Taiwan vessels are unable to operate in the areas with very low temperature and strong waves. The fishing area of Taiwan SBT fleet is around 25°S-45°S.

This report includes information and data on Ecologically Related Species (ERS) of Taiwan SBT fishery sampled by scientific observers updated to 2008.

#### **2. Review of SBT fisheries**

##### *Fleet size and distribution*

More than 100 vessels had SBT catch records during 1998-2001. Since 2002, Taiwan became a member to the Extended Commission of CCSBT and agreed on its national quota of 1,140 tons. Taiwan has imposed strict regulation and started to allocate individual quota to each vessel which was authorized to fish for SBT since 2002. Besides, those vessels are separated to either seasonal target ones or by-catch ones. The number of active vessels to fish SBT is 30-100 from 2002 to 2008 shown as Table 1.

##### *Distribution of Catch and Effort*

Historically, annual catches of SBT were less than 250 tons in early 1980s. Since 1980s, with the improvement of vessel facilities, the fishing grounds and target species have also been changed. Apart from capturing albacore, our vessels also capture SBT in the specific seasons. Since 1989 onwards, annual catch of SBT has

surpassed 1,000 tons. After then, the SBT catches fluctuated between 800 and 1,600 tons. Since CCSBT has been established, Taiwan, in line with the CCSBT conservation and management measures, voluntarily set up its SBT catch limit at 1996 level of 1,450 tons since 1997. During 1996-2001 the average annual catch of SBT maintain around 1,450 tons. When Taiwan joined CCSBT in 2002, it compromised by reducing 310 tons from our original self restraint catch limit, and set up annual catch quota to 1,140 tons. In 2006, Taiwan had agreed CCSBT adopt TAC arrangement based on binding allocated catch limits for 2007 – 2009, and catch quota has being fixed in 1,140 tons. On the other hand, Taiwan undertook maintaining actual catch at the level below 1,000 tons for continuous 3 years to contribute to the recovery of SBT stock.

The total annual catches were 841tons in 2007, and 876 tons in 2008. The annual catch of SBT by Taiwan longline fishery is shown in Fig. 1.

The fishing locations of SBT fishing vessels are mainly concentrated in the waters of 30°S – 40°S in the Indian Ocean and the waters adjacent to the Atlantic Ocean (Fig. 2). There are two fishing grounds in general: one is in the central Indian Ocean around 55°E – 95°E, 30°S – 40°S, and the other locates off the southeast coast of Africa around 30°E – 55°E, 35°S – 45°S. There are 2 fishing seasons for Taiwan SBT fishing vessels operating in the southern and central Indian Ocean from June to September, and in the southern and western Indian Ocean extending to the eastern limit of the Atlantic Ocean from October to February of the following year.

### **3. Fisheries Monitoring for Each Fleet**

Intensive efforts have been continuously made for better understanding and monitoring the fishery through the following measures:

- (1) The weekly report for SBT catch is required by Taiwan Tuna Association to be submitted to Fisheries Agency. Provision of daily records, including catch, fishing location and discards in the weekly report has been required while applying for SBT statistical document since 2002.
- (2) Logbook is required to be submitted to Fisheries Agency within specified time

period after a fishing vessel enters a port. Since 2004, a revised logbook form has been distributed to fishing vessels for recording information on ecologically related species, such as seabirds, marine mammals and sea turtles.

- (3) From April 2002, it is mandatory for the vessels authorized to fish for SBT to be installed vessel monitoring system (VMS) in order to monitor location of the vessels.
- (4) The experimental scientific observer program has been launched since 2001, but vessels fishing for SBT commence to be deployed 2 observers on 2 vessels in 2002. There were 4 scientific observers dispatched on SBT vessels for 4 observation trips during the fishing season in 2007. In 2008, due to high fuel price, for saving cost, fishing vessels reduced to enter ports and meet transshipping vessels, it was difficult to deploy observer on board, so that only two scientific observers were dispatched on 2 SBT vessels. Observers record the catches and effort every day, measure fish length, identify bio-species including tuna-like species, sea turtles, seabirds, sharks and marine mammals etc, and sample muscle tissues, otoliths, stomach content and gonad of tuna for research. The coverage rate was 6.65% by effort in 2008.
- (5) Trade Information Scheme (TIS) has been implemented to collect more updated and detailed catch information since June 2000. While applying for TIS document, the applicant is required to submit the transshipment document issued by the cargo carriers. After unloading catch in Japan, the applicant is required to submit to Fisheries Agency the unloading documents issued by the Japanese Customs for further verification of catch statistics.
- (6) 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.

#### **4. Seabirds**

Two fishing seasons for Taiwan SBT vessels are from June to September and from December to February of the following year. The major fishing grounds is around 30°

S-40°S in the Indian Ocean and Atlantic Ocean. The lower latitude the vessels operate at, the less frequency and fewer seabirds are sighted.

According to the record of scientific observers deployed on SBT vessels in 2006-2008, 30 seabirds were caught, among which, 5 were caught still alive and released, and 25 were dead and discard. Table 2 shows the number of seabirds caught, total hooks, and bycatch per unit effort (BPUE) recorded by observers in 2006-2008. Table 3 shows the composition of species.

## **5. Other Non-target Fish**

For SBT vessels, the main catch is albacore and SBT. Other non-target fish include bigeye tuna, yellowfin tuna, sharks, and billfish.

In 2008, blue shark was the most dominant species of shark accounting for 92.47% according to observer record, shortfin mako shark accounting for 3.42%, and great white shark accounting for 4.11%. Table 4 shows the composition of shark species caught during observation trips from 2006-2008.

## **6. Marine Mammal and Marine Reptile**

According to observer record in 2003-2008, there were not any cetaceans sighted during observation trips.

Sea turtles in general live in the waters near the equator and the depth of habitat is above 150m, but all of Taiwan SBT vessels operated in the area southern than 25°S and fishing depth is about 300-400m, so sea turtle was sighted rarely by observers. There were not any sea turtles sighted by observers from 2006-2008.

## **Mitigation measures to minimize seabird and other species bycatch**

### **Current Measures**

#### ***Mandatory Measures for Each Fleet***

The government of Taiwan has introduced a regulation required vessels fishing southern than 30°S to deploy a tori line to reduce seabird incidental catch since 2004. Besides, in line with the resolution 08/03 on reducing the incidental bycatch of

seabirds in longline fisheries adopted by IOTC, vessels fishing south of 30°S shall use at least two of mitigation measures consistent with the resolution since 2009.

According to the Resolution adopted by ICCAT and IOTC, Taiwan has applied mandatory regulations to require its authorized vessels fishing in the Atlantic Ocean and Indian Ocean not to have onboard fins that total more than 5% of the weight of sharks onboard, up to the first point of landing since 2005. The regulation has applied to the fleets operating in Pacific Ocean since 2006. Besides, Taiwan has imposed regulation to prohibit *Rhincodon typus* (whale shark) to be captured, possessed and sold since 2008.

In addition to the above mentioned regulations, Taiwan government has imposed “Wild Life Protection Act”, forbidding fishermen to capture or possess the following kinds of sea turtles, which include green turtle, loggerhead turtle, olive ridley turtle, leatherback turtle and hawksbill turtle. The incidentally caught sea turtles must be released and the fishermen are required to record this event in the logbook.

#### ***Voluntary Measures for Each Fleet***

Those captains fishing in the area of southern high latitude are greatly concerned about bait losses and incidental catch of seabirds. Most of the captains take several measures at the same time to avoid bait biting by seabirds, such as hook-casting before dawn, using weighted branchlines, using semi-thawed baits, etc.

Besides, in line with “International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries” of FAO, Taiwan has adopted “National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (NPOA-Seabirds)” which came into force in October 2006 to act as a basis for establishing seabird conservation policy.

Similarly, in respect of sharks, we have also adopted NPOA-sharks which entered into force in May 2006, not only for the guidance to encourage full usage of caught shark, but also for avoidance of waste.

#### **7. Public relations and education Activities**

- (1) Fisheries Agency of Taiwan had authorized Wild Bird Federation Taiwan (WBFT) to implement a fishermen education programme for mitigating seabirds by-catch in 2005. Wild Bird Federation Taiwan (WBFT) conducted an educational programme for the Taiwan fishermen in the Port Louis, Mauritius in the Fall of 2005. The programme was the first trial to discuss the by-catch problems and the efficiency of mitigation measures with the fishermen in their cabins.
- (2) Distribution of posters, sheets and booklets for guidance of mitigation measures of reducing seabird by-catch, shark full utilization, and species identification for seabirds, sharks and sea turtles to fishermen. (CCSBT/0402/Info28)
- (3) For sea turtles, we encouraged fishermen to carry dip net and line clipper on board to safely release sea turtles. Meanwhile, we also distributed 3000 copies of posters entitled “Release the sea turtle incidentally caught” to our fishermen in 2003.
- (4) In order to avoid incidental catch of sea bird, sea mammal and sea turtle by deep-sea fisheries, Taiwan government sponsored the World Wildlife Fund (WWF) international and Chinese Wild Bird Federation to hold the International Smart Gear Competition Judges Workshop in Taiwan in September 2007. After the workshop, Fisheries Agency hosted a forum inviting the international experts and the related industries to discuss how to mitigate bycatch species during fishing operation.

All local governments and related fisheries associations/ organizations have been required to strengthen the knowledge to fishermen. Besides, broadcasting for educating fishermen through the professional fisheries radio station has been conducted regularly. The related information has been passed on to ship masters and crews during observer trips and while in port.

## **9. Others**

No other information.

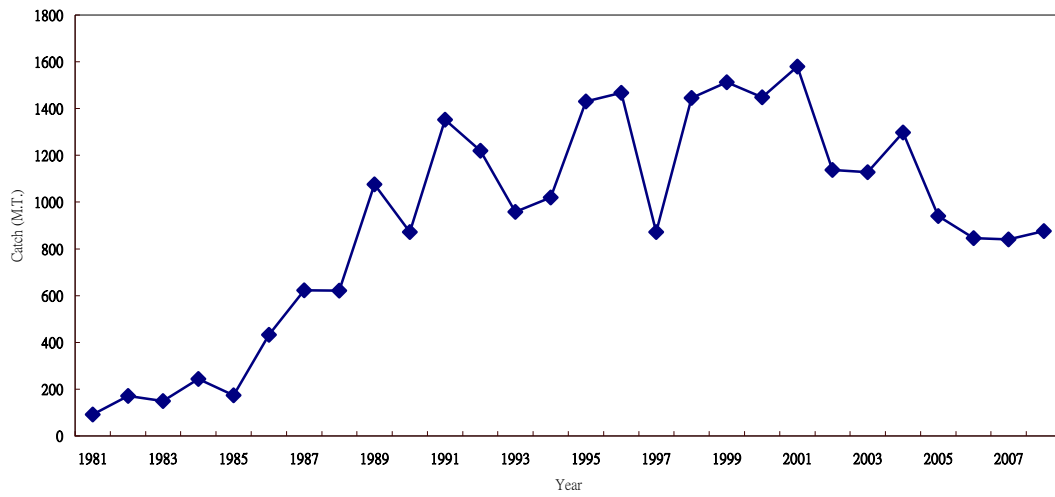


Fig. 1 The annual catch of SBT by Taiwan longline fishery in weight from 1981-2008.

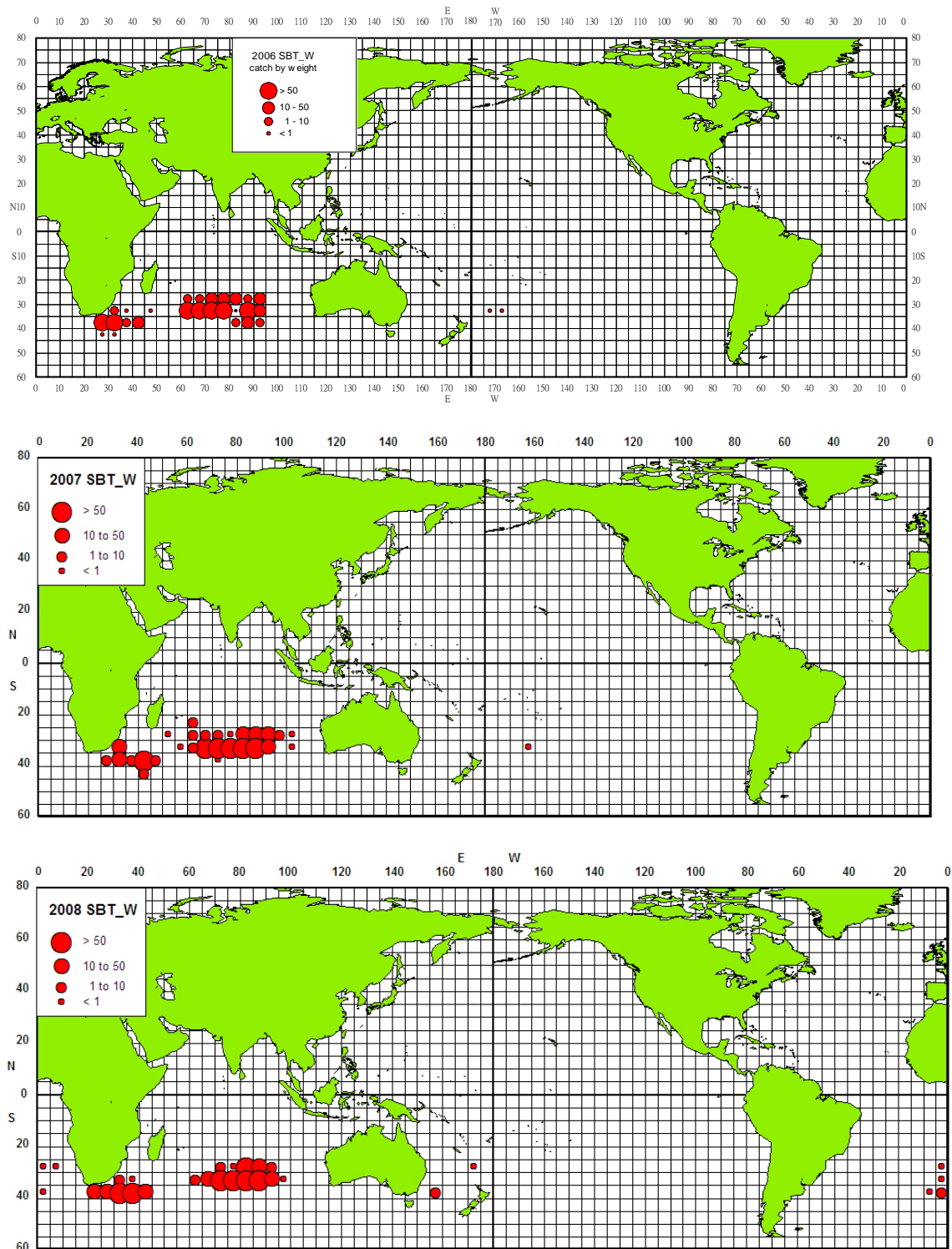


Fig. 2 Distribution of SBT catch by Taiwan longline fishery from 2006 to 2008. (Data in 2008 is preliminary.)



Table 1. The number of authorized vessel to fish SBT during 2002-2008.

Year	2002	2003	2004	2005	2006	2007	2008
N. Vessel	61	100	97	57	36	30	41

Table 2. Incidental catch of seabirds recorded by observers dispatched on SBT vessels in 2006 - 2008.

Year	Caught seabird number	Total hooks	BPUE (number/ thousand hooks)	Life Status	
				Alive and Release	Dead
2006	12	912692	0.013	4	8
2007	16	1197160	0.013	0	16
2008	2	595820	0.003	1	1

Table 3. Seabird species recorded by observers deployed on SBT vessels in 2006 - 2008.

Species	Observed number		
	Year		
	2006	2007	2008
Wandering albatross	0	0	0
Sooty albatross	0	0	0
Black-browed albatross	0	0	0
Buller's albatross	0	0	0
Yellow-nosed albatross	7	0	0
Royal albatross	1	0	0
other albatross	0	16	0
Giant petrel	4	0	0
Cape petrel	0	0	0
White-chinned petrel	0	0	0
other seabirds	0	0	2
<b>Total</b>	<b>12</b>	<b>16</b>	<b>2</b>

Table 4. By-catch of shark species recorded by observers deployed on SBT vessels in 2006 – 2008.

Year	species	Number	%	CPUE
				(number/ thousand hooks)
2006				
	Blue shark	648	88.65	0.710
	Shortfin mako	58	7.93	0.064
	Silky shark	16	2.19	0.018
	Oceanic whitetip shark	2	0.27	0.002
	Bigeye thresher	5	0.68	0.005
	Pelagic thresher	1	0.14	0.001
	Other shark	1	0.14	0.001
	Total	731	100	0.801
	Total hooks	912692		
2007				
	Blue shark	691	79.98	0.577
	Shortfin mako	127	14.7	0.106
	Great white shark	37	4.28	0.031
	Silky shark	9	1.04	0.008
	Total	864	100	0.722
	Total hooks	1197160		
2008				
	Blue shark	135	92.47	0.227
	Shortfin mako	5	3.42	0.008
	Great white shark	6	4.11	0.010
	Total	146	100	0.245
	Total hooks	595820		