

## **National Report of Taiwan to ERSWG6**

### **Fisheries Agency of Taiwan**

#### **1. Introduction**

Southern bluefin tuna (SBT) has been caught by Taiwanese deep sea longline fleet since 1970s. At the early stage, SBT was only by-catch species, and as a result of the development of ultra-low temperature freezers, vessel equipped with such freezing facilities started to target this species seasonally since late 1980s.

With constraint from the vessel design, most Taiwanese vessels are unable to operate in the areas with very low temperature and strong waves environment. The fishing area of Taiwanese SBT fleet is around 25°S-45°S.

This report, which includes information and data on Ecologically Related Species (ERS) of SBT, was reported or sampled by our Scientific Observer in 2004.

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

##### ***Fleet size and distribution***

More than 100 vessels have caught SBT during 1998-2001. Since 2002, Taiwan becomes a member of the Extended Commission of CCSBT and agreed its national quota of 1,140 mt. Taiwan imposed strict regulation and starts to allocate individual quota to its authorized vessels in 2002. Two groups of fishing vessels for seasonal target fishery and by-catch on SBT are differentiated. Therefore, the number of authorized SBT fishing vessels drastically reduced to 61 vessels in 2002, and then returned to 100 vessels in 2003, and 107 vessels in 2004.

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

Historically, annual catches of SBT were less than 250 mt 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 surpassed 1,000 mt. After then, the SBT catches fluctuated between 800 and 1,600 mt. 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 mt since 1997. During 1996-2001, the average annual catch of SBT, caught by around 100-140 vessels, maintain around 1,450 mt. When Taiwan joined CCSBT in 2002, it compromised by reduced 310 mt from our original self restraint catch limit, and set up annual catch quota to 1,140 mt. The total annual catch was preliminary estimated to be 1,298 mt caught by 107 vessels in 2004, slightly exceeded the catch limit set by CCSBT. Therefore, the additional 158 mt, will be deducted from the quota in 2005. The annual catch of SBT by Taiwanese longline fishery is shown in Fig. 1.

Catches are mainly caught in the waters of 30°S – 40°S in the Indian Ocean and seas 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 another is off the southeast coast of Africa around 30°E – 55°E, 35°S – 45°S. Seasonally, SBT are caught 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 through Taiwan Tuna Association to submit 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 submit to Fisheries Agency within specified time period after fishing vessel entered into 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 that catch SBT are required constrainedly to be equipped with VMS's equipment 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 2003. There were 3 scientific observers dispatched on SBT vessels for 5 observation trips during the fishing season in 2004. Observers record the catches and locations every day, measure the fish total 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 was 4.67% by vessel.
- (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.

#### **4. Seabirds**

Two fishing seasons of Taiwanese SBT vessels are June to September and November 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, the less frequency and number of seabirds are sighted.

Ninety two seabirds were caught according to the scientific observers record in south of 25°S in 2004, among which 28 seabirds were caught in Indian Ocean, and 64 were caught in Atlantic Ocean. Among which, 28 were caught still alive and released, and 64 were dead and discard. Table 1 shows the number of seabirds, total hooks, and CPUE recorded by observers in 2004.

Wandering albatross (*Diomedea exulans*), sooty albatross (*Phoebetria fusca*), white-chinned petrel (*Procellaria aequinoctialis*), grey petrel (*Procellaria cinerea*), and flesh-footed shearwater (*Puffinus carnipes*) are major seabirds caught in the fishing areas. Table 2 shows the composition of species.

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

For Taiwanese vessels, SBT is mainly caught by albacore-targeting vessels. Other non-target fish include bigeye tuna, yellowfin tuna, sharks, and billfish.

Blue shark was the most dominant species of shark accounted for 86% according to observer record, other species such as shortfin mako shark, *Alopias pelagicus*, and *Alopias superciliosus* only accounted for 10%. Billfish, swordfish were dominant, too. Other species, such as striped marlin, blue marlin, and sailfish were seldom seen.

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

According to observer record in 2003-2004, sightings of cetaceans were very rare.

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

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

### **Current Measures**

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

The Government of Taiwan has introduced a regulation to reduce seabird incidental catch in Taiwanese longline fisheries since 2004. Vessels fishing southern than 30°S are required to deploy a tori line during line setting.

Besides, in compliance with 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.

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 includes 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 south high latitude are greatly concerned about bait losses and incidental catch of seabirds. Most of captains take several measures at the same time to avoid bait biting by seabirds, such as hook-casting before dawn, installing tori line, 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 drafted “National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (NPOA-Seabirds)” to be acted as a basis for establishing seabird conservation policy.

Similarly, in respect of sharks, we have also drafted NPOA-sharks not only for guidance to encourage full usage of caught shark, but also for avoidance of waste.

## **8. 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 Taiwanese 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 poster, 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 encourage fishermen to carry dip net and line clipper on

board to safely release sea turtles. Meanwhile, we also distributed 3000 copies of folding entitled “Release the sea turtle incidentally caught” to our fishermen in 2003.

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

### **9. Information on other ERS (non-bycatch)**

Feeding ecology on SBT is investigated on stomach samples collected by observers from Taiwanese longliners. 105 samples were collected, from the central Indian Ocean in August 2004 and June-July 2005. The length distribution of most specimens was ranged 100-130 cm with a body weight ranged 10-30kg for both sexual fish. 35% stomachs were empty, 59% stomachs were different level of half full, and about 6% were full. Middle size (90-140 cm) of SBT has higher fullness values. Fig.3 shows the major components of diet in weight were fish (93.06%), cephalopods (2.21%), and crustaceans (7.02%).

This study was based on one-year data collection by observers and only 105 samples of stomachs were collected to generate the preliminary result. More samples are needed in the future, to help obtain more ecological information on predator-prey relation for juvenile and sub-adult southern bluefin tuna.

### **10. Others**

No other information.

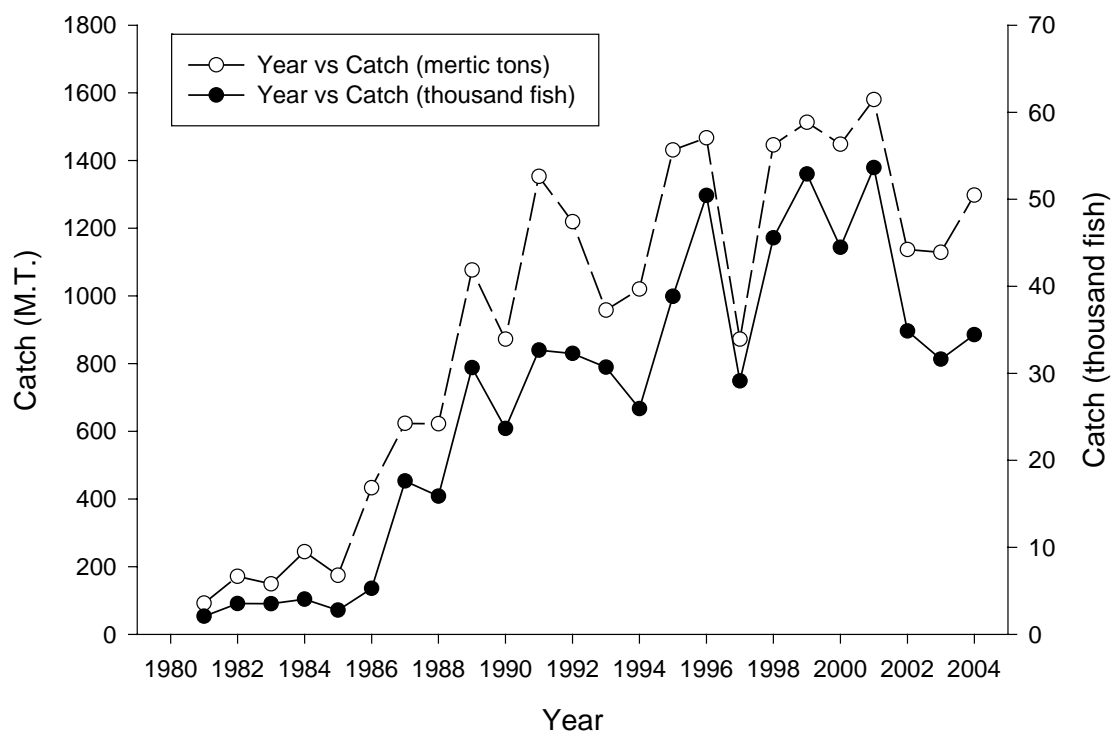


Fig.1 The annual catch of SBT by Taiwanese longline fishery in the number and weight from 1981-2004.

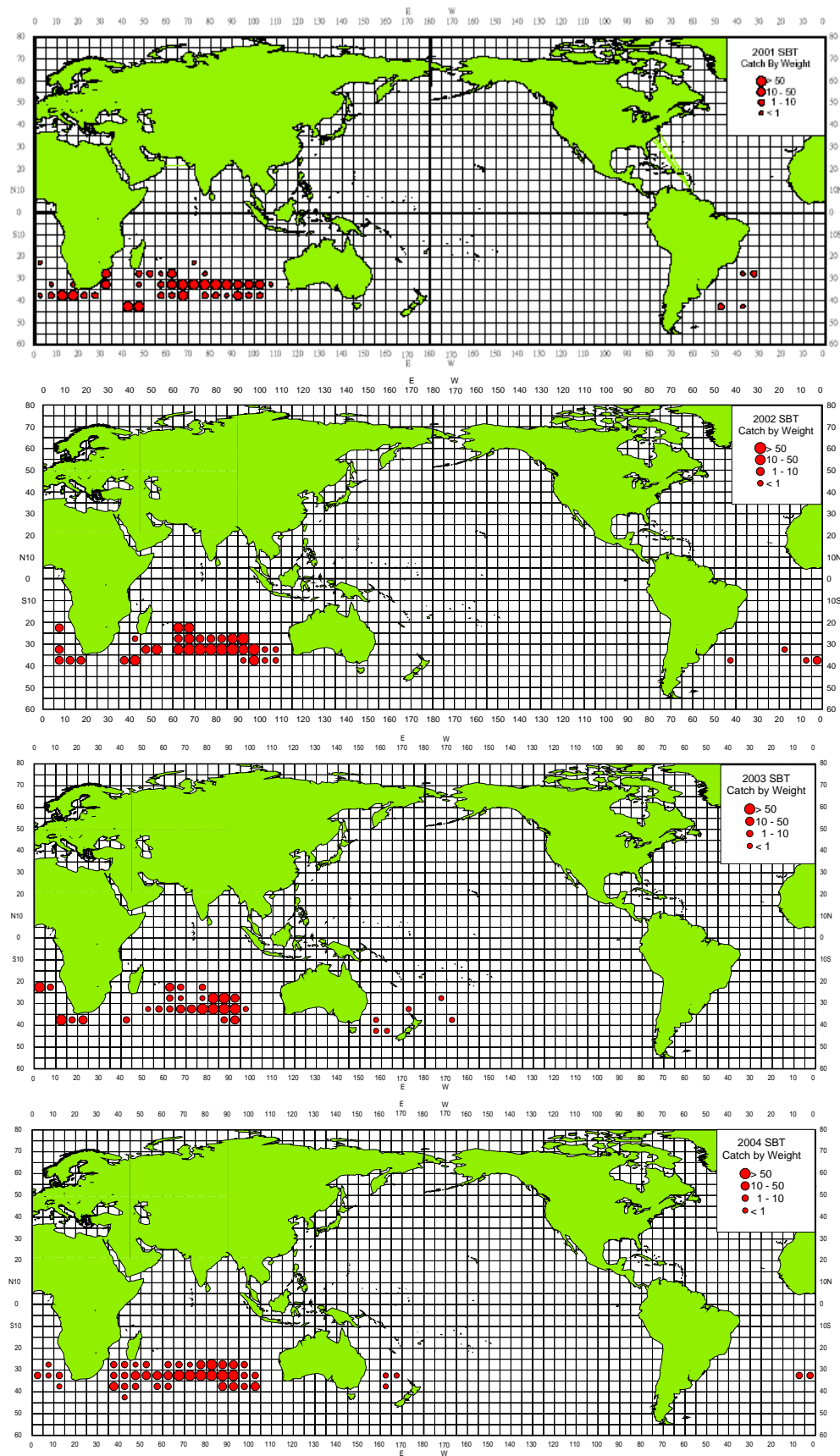


Fig. 2 Catch distribution of SBT by Taiwan longline fishery from 2001 to 2004.

(Data of year 2004 is preliminary and may be subject to revision.)



**Table 1. The number of seabirds, total hooks, and CPUE observed by observers in 2004.**

Area	Caught seabird number	Total hooks	CPUE (number/ thousand hooks)	Life Status	
				Alive and Release	Dead
Indian Ocean	28	895,542	0.0313	15	13
Atlantic Ocean	64	1,033,901	0.0619	13	51
All Ocean	92	1,929,443	0.0477	28	64

**Table 2. Calculated the number of each specie of seabirds in Indian and Atlantic Ocean from observer's data in 2004.**

Species	Observed number		
	Indian Ocean	Atlantic Ocean	Total
<i>Wandering albatross</i>	2	5	7
<i>Sooty albatross</i>	3	2	5
<i>Black-browed albatross</i>	0	18	18
<i>Buller's albatross</i>	6	0	6
<i>Yellow-nosed albatross</i>	14	14	28
<i>other albatross</i>	1	7	8
<i>Southern giant petrel</i>	–	6	6
<i>Cape petrel</i>	–	1	1
<i>White-chinned petrel</i>	2 –		2
<i>other seabirds</i>	–	11	11
<b>Total</b>	<b>28</b>	<b>64</b>	<b>92</b>

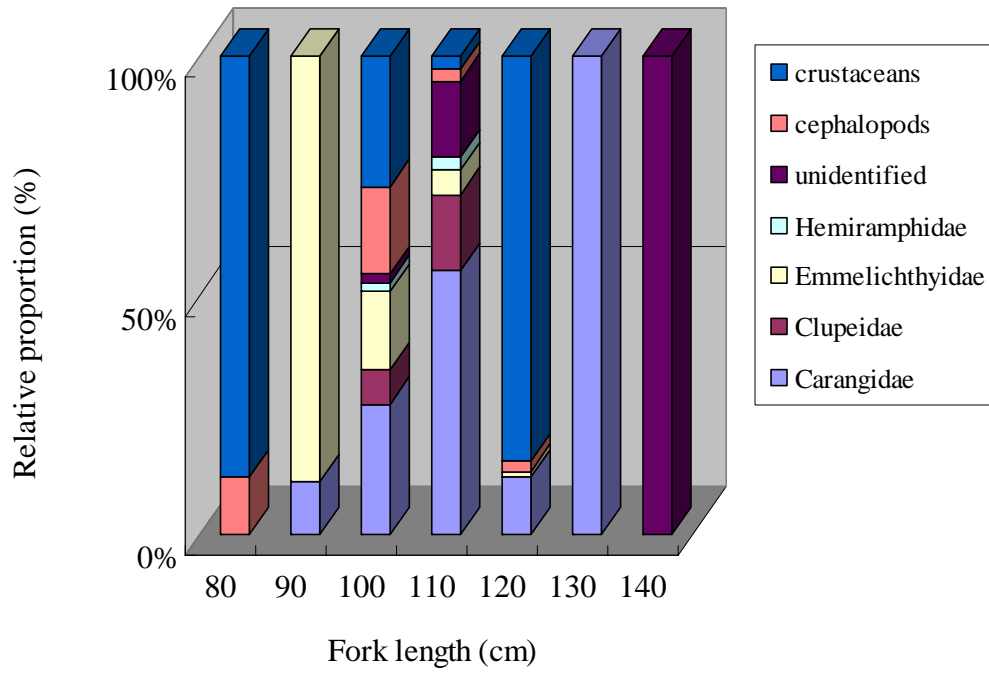


Fig. 3 Relative proportions of the main preys of southern bluefin tuna caught in the central Indian Ocean.