

Review of Taiwanese SBT Fishery of 2003/2004

1. INTRODUCTION

SBT was mainly a by-catch species of Taiwan tuna longline fishery in the past, and following the development of super-low temperature freezers, vessels equipped with such freezing facilities started to target this species seasonally recent years. Annual catches of SBT were smaller than 250 mt in early 1980s (Table 1). However, due to the increase of the fleet size, the development of deep sea longliners, and the expansion of fishing grounds, the catches of SBT were increased thereafter. From 1989 onwards, annual catch of SBT surpassed 1,000 mt, where drift net fishery accounted for about ¼ of the catches in 1989 and 1990. After then, the SBT catches fluctuated between 800 and 1,600 mt. The total annual catch in 2004 was preliminarily estimated to be 1,298 mt, an increase of 170 mt from 2003. The annual catch in 2004 was outreached 1,140 mt, the catch limit set by CCSBT. Therefore, the outreaching amount, 158 mt, will be deducted from the quota in 2005.

2. CATCH AND EFFORT

Three types of data were collected to compile the catch and effort data for SBT, namely: (1) weekly report (SB data), (2) logbooks (LG data) and (3) commercial trading information such as statistical documents of TIS and certified weight reports of Shin Nippon Kentai Kaisha or OPRT (OT data).

Besides of requested logbook reports, based on the official announcement made at early 1996, every vessel that has caught SBT was required to report their SBT catches in weight and fishing location weekly from 1996 onwards, to gather more prompt and accurate SBT information and to manage the total SBT catch under the self-restrained level. However, weekly reports could only provide the advantage for recovering fast in fishing data, there were no information for other species besides SBT. Trading information on SBT product was also collected through the subscription of certified weight reports of Shin Nippon Kentai Kaisha from 1994 to 2003, and was collected by OPRT from 2004 onwards. The weekly report was crossed-checked with the logbook and trading information to reduce the possibility of non-reporting.

The estimated annual catch of SBT by gear from 1971 to 2004 is shown in Table 1. The catch distribution of 2001-2004 is mapped in Figure 1. In view of the characteristics of Taiwan's SBT fishery as seasonal basis for some

vessels, the study of the approximation of the effective effort has been continued. The 2004 data is still preliminary and may subject to revision.

3. NOMINAL CPUE

The catch of SBT was relatively low in the total longline catch and there was no separate 'SBT' item on the logsheet collected before 1994. Information on SBT catch was scarce in the logbooks recovered. Weekly reports were therefore treated as the main source for catch and effort information since 1996. However, since the design of weekly report was to monitor the SBT catch, rather than to replace the logbook, the effort information was incomplete in the report. Such situation has led to an over-estimation of CPUE. After crosschecking with other available information from fishing companies and from logbook later recovered, this problem has been improved.

For the estimation of CPUE from 1996 to 2003, the nominal CPUE series was derived from the LG data excluding the daily set operated during the non-season (February ~ May) or in the north area of 20°S. The catch and effort data for 2004 is preliminary and may subject to revise once more information comes in.

Figure 2 shows nominal CPUE trend of Taiwanese longline fishery for SBT from 1996-2004. The CPUE (number of fish caught per 1000 hooks) appeared to be stable between 1.02 and 1.09 from 2002-2004.

4. SIZE COMPOSITION

A length data sampling scheme has been applied in Taiwan deep-sea longline fishery statistical systems. Fishermen were requested to report length measurement of the first 30 fish of all that day's catch, in addition to the logbook reports.

From 1994 onwards, the SBT category was added to the logbook systems. In addition to submit the new logbook after the end of each trip, starting from 1996 fishermen were also requested to report SBT catch position and weight on weekly basis to the fishery authority for implementing catch limitation, and were requested to report every fish's size measurement from 2002.

Figure 3 shows the length frequency of SBT caught during 2001-2004. The size mainly ranged from 100 cm to 130 cm, except for 2001 for which more small fish was noted. It was also noted that the mode of the size distribution in 2004 was shifted to the smaller size, but was not with big change from 2003.

5. FLEET SIZE AND DISTRIBUTION

According to the weekly reports and trading information, more than 100 vessels have caught SBT during 1998-2001. Due to the quota regulation, the number of vessel allowed and had caught SBT drastically reduced to 61 vessels in 2002, however increased to 100 vessels in 2003, and 92 vessels in 2004. Their catches were mainly made in the waters of 20°S - 40°S in the Indian Ocean and seas adjacent to the Atlantic Ocean. There were two major fishing grounds in general: one in the central Indian Ocean around 55°E-95°E, 30°S-40°S, and another off the southeast coast of Africa around 30°E-55°E, 35°S-45°S. Seasonally, the fish was caught in the southern and central Indian Ocean from June to September, and in the southern and western Indian Ocean extending to the eastern boundary of the Atlantic Ocean from October to February of the following year.

6. SCIENTIFIC OBSERVATION PROGRAM

Appendix 1 provides a report on implementation of the CCSBT observer standards and the overall review and results of the SBT scientific observer pilot program.

Table 1. Annual SBT catches by Taiwanese deep-sea longline and drift net fisheries during 1971-2004.

Unit: metric ton

Year	Deep Sea Longline	Drift Net	Total
1971	30		30
1972	70		70
1973	90		90
1974	100		100
1975	15		15
1976	15		15
1977	5		5
1978	80		80
1979	53		53
1980	64		64
1981	92		92
1982	171	11	182
1983	149	12	161
1984	244	0	244
1985	174	67	241
1986	433	81	514
1987	623	87	710
1988	622	234	856
1989	1,076	319	1,395
1990	872	305	1,177
1991	1,353	107	1,460
1992	1,219	3	1,222
1993	958		958
1994	1,020		1,020
1995	1,431		1,431
1996	1,467		1,467
1997	872		872
1998	1,446		1,446
1999	1,513		1,513
2000	1,448		1,448
2001	1,580		1,580
2002	1,137		1,137
2003	1,128		1,128
2004*	1,298		1,298

* Data in 2004 is preliminary and may subject to revision.

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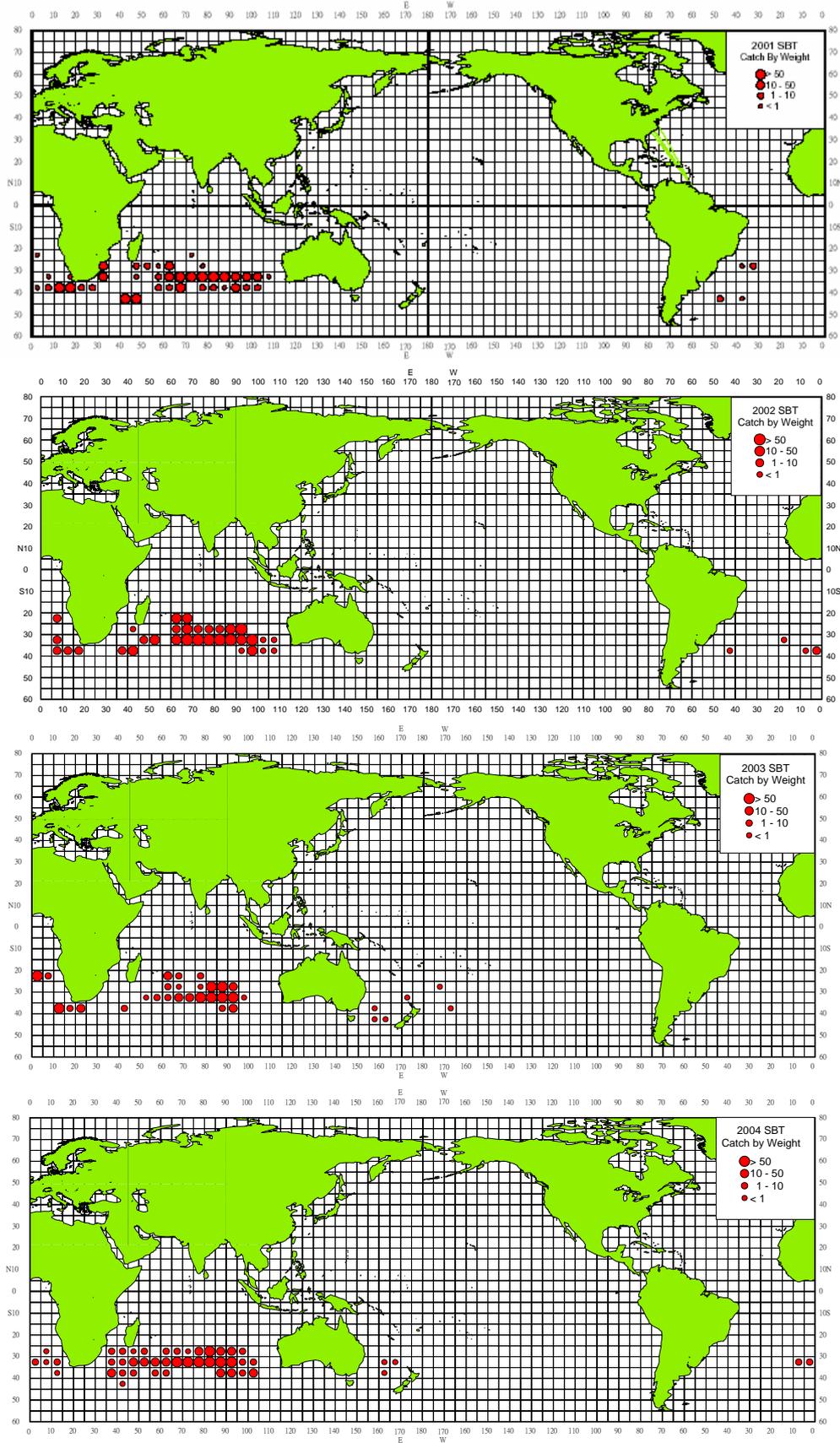


Figure 1. Catch distribution of SBT by Taiwan longline fishery from 2001 to 2004. (Data of year 2004 is preliminary and may be subject to revision.)

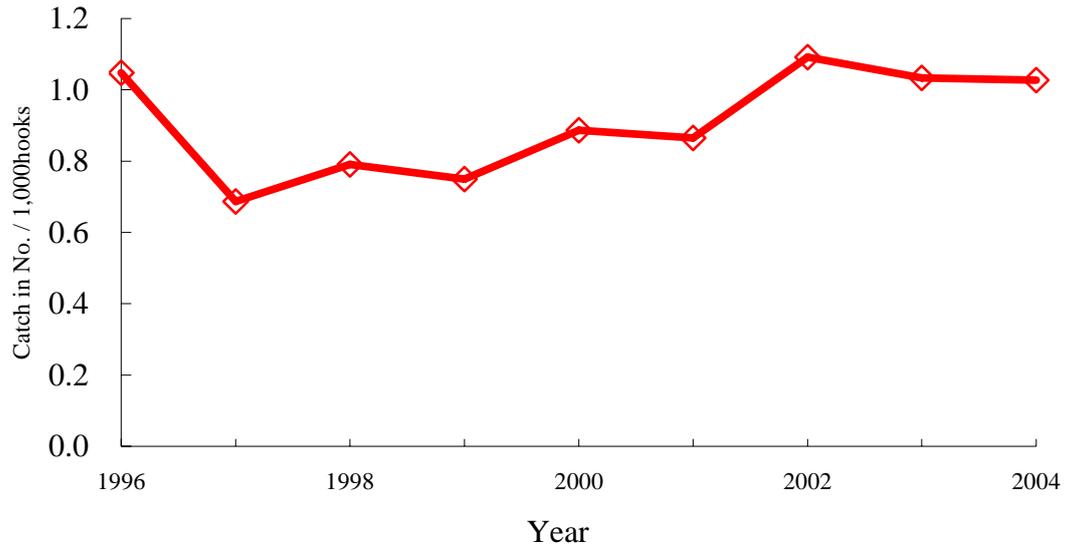


Figure 2. Nominal CPUE series of southern bluefin tuna during 1996-2004. (Data of 2004 is preliminary. The entire trip data of the vessels having caught SBT in the year were compiled and used for the series.)

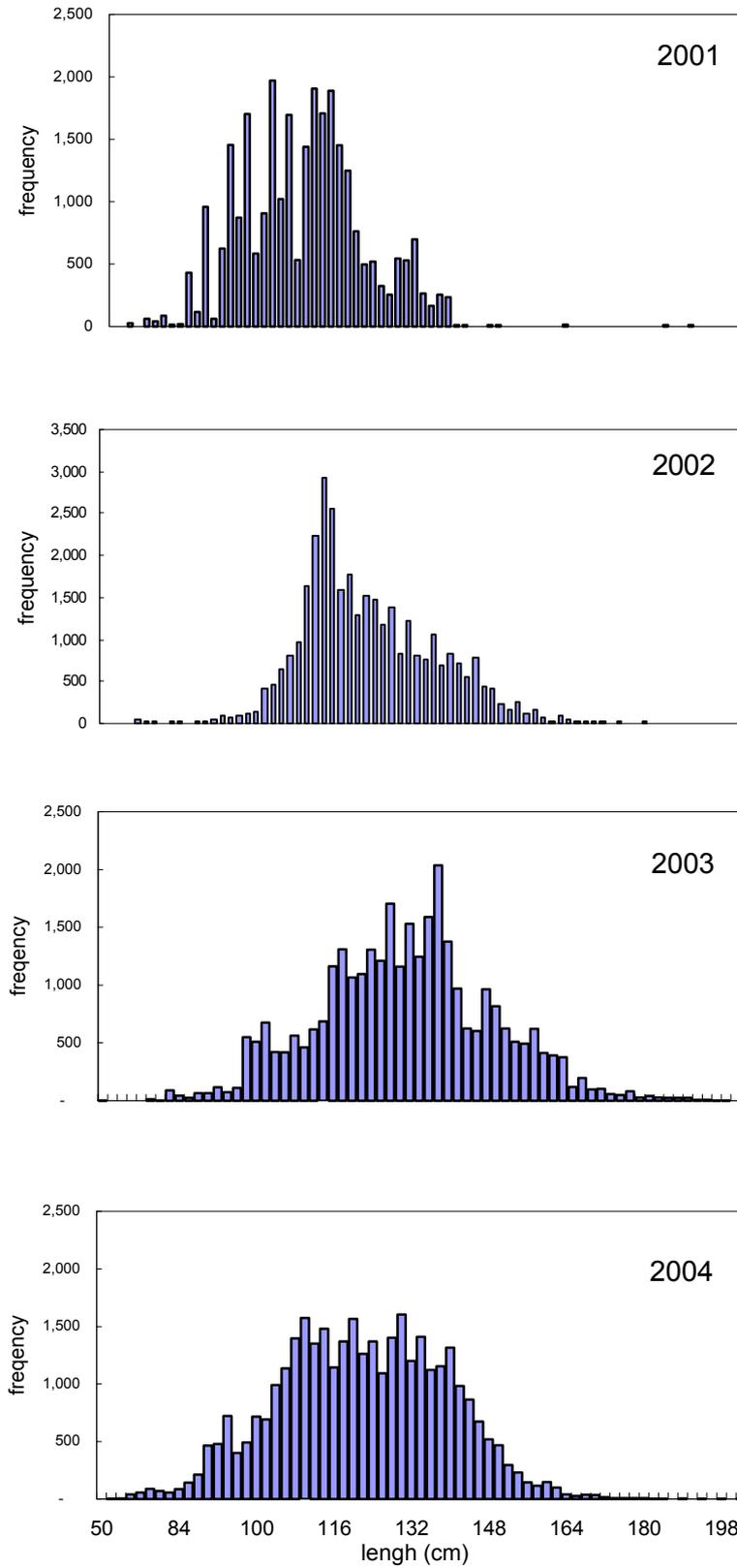


Figure 3. Length frequency of SBT by Taiwan's longline fishery from 2001 to 2004. (Data of 2004 is preliminary.)

Appendix 1

Scientific observer pilot program

To collect the scientific information of tuna longliners, the scientific observer pilot program of deep-sea tuna fisheries of Taiwan was launched in 2001. Overseas Fisheries Development Council of The Republic of China (OFDC) was entrusted by Fisheries Agency (FA) to carry out this program and to be in charge of recruiting scientific observers. FA also invited researchers on fishery sciences and advanced observers (with 2 years' experience) to form a special panel to design the observer training program, items of observer's tasks, biological and by-catch information needed to be collected for scientific researches and the format of data records.

The qualification for applicants is college graduated or senior high school graduated with at least 5 years experience on fishing vessels. The applicants passing the oral examination will become the candidates of scientific observer, and only those passing the 3 weeks training program and health screening will be employed as scientific observers.

A. Observer Training

All candidates for scientific observer have to attend the 3 weeks training programs including seafaring basic safety training, operations of navigation devices, mini-log thermometer and VMS system, identification of tuna and tuna-like species, marine turtle, seabirds, sharks and marine mammal, muscle tissue, otoliths, stomach content and gonad sampling and fishing activities, catches and location data recording requirements. After the training program, these candidates will be asked to go aboard the training ship for one-week trial trip at sea and have a test in identifying the tuna and tuna-like species at local fish market.

In 2004, there were 9 persons employed as scientific observer, an increase of 3 persons from previous year. There were 3 observers placed on 5 trips of SBT vessels during the fishing season.

B. Scientific Observer Program Design And Coverage

With 2 years' experience for implementing scientific observer program and with the distribution of Taiwan's fishing fleet in three oceans, we have made our best effort to improve the observer program and have got progress in

2004. We endeavor to establish and improve our observer program step by step.

The gross registered tonnages of five vessels were 315, 394, 450, 450, 514, respectively, and these vessels were chosen by lot to let observers go aboard in 2004.

The boat owners, whose vessels intend to catch SBT, have to register before the fishing season. Because the sampling fishing vessels will get an additional catch quota of 3 metric tons, the boat owners of the registered vessels who want to be the sampling vessels have to express their willingness and the sampling vessels will be determined by lot. In 2004, there were 5 sampling vessels selected from these registered vessels.

The number of tuna longliners fishing SBT was 92 in 2004, and the coverage rate by vessel was about 5.43%. The number of days deployed on observation work was 152.

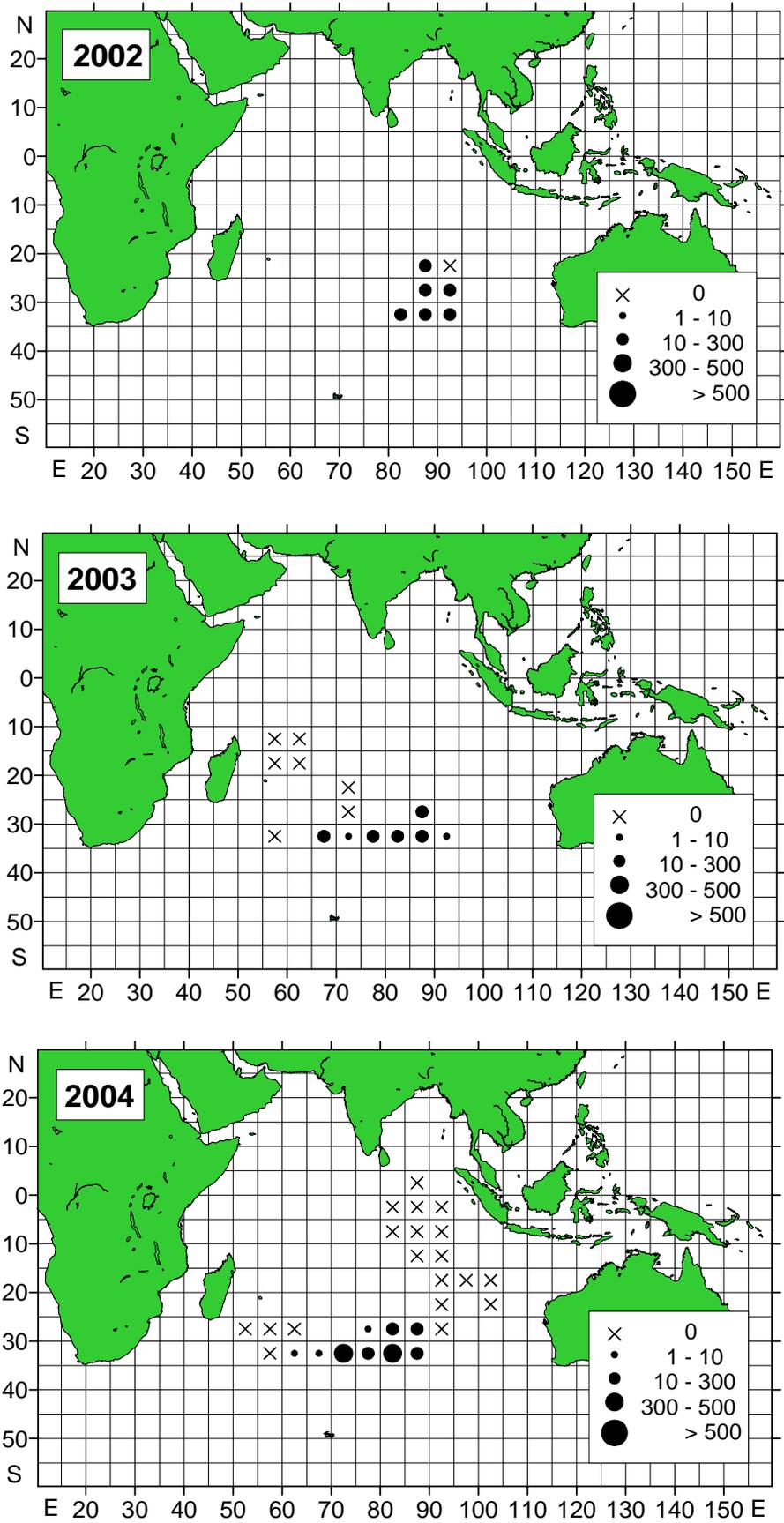


Figure 1. The catch numbers of SBT sampling longliners from 2002 to 2004.

C. Observer Data Collected

Table 1. The observation data of SBT sampling vessels

Year	2002	2003	2004
Days of Observation(days)*	68	133	165
SBT sampling number(no. of fish)	498	222	1313

* the numbers of days with SBT caught.

Table 2. Numbers of biological samples collected by observers.

Year	2003	2004
Otoliths number	102	316
Stomach contain	-	93

Table 3. Numbers of FK length measurement and observation days

Year	2002	2003	2004
Days of Observation(days)**	68	133	152
SBT sampling number(no. of fish)	335	172	1267

**the numbers of days with measurement of SBT FK length by observers.

D. Tag Return Monitoring

Taiwan carried out the SBT tagging program in 2004 in corporation with Australia. Our observers tagged 37 SBT successfully in 2004, and 3 out of those 37 tags were recovered and observed by observers in January, April and August in 2005, respectively.

E. Problems Experienced

The boat owners and skippers of SBT sampling vessels support this observer program with willingness and cooperate with FA and OFDC closely. Because the distance from Taiwan to the fishing ground is very far, the transportations for supplies and equipments needed for sampling will take more than 1 month from Kaohsiung, mother port of the deep-sea longliners, to the sampling vessels. And because these SBT fishing vessels will not return to Taiwan after SBT fishing season, it is hard for researchers to arrange interviews with skippers to collect information on fishing activities.