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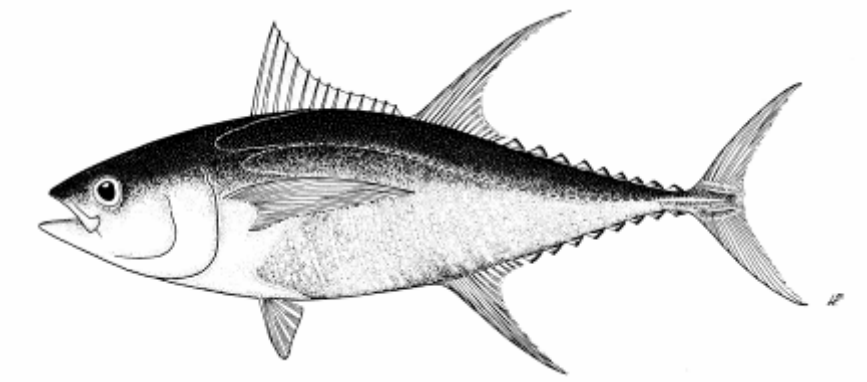
Tuna Fisheries Status Report of Chinese Taipei in the Western and Central Pacific Region



Deep-Sea Fisheries Research and Development Center,
Fisheries Administration, Chinese-Taipei.

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1. Brief introduction

The Pacific Ocean is one of the earliest fishing grounds exploited by Taiwanese tuna fishery. Currently, there are three types of tuna fisheries operating in WCPFC Convention area: large tuna longline (LTLL, previously named FTLL) fishery, distant-water purse seine (DWPS) fishery and small tuna longline (STLL, previously named CTLL) fishery. The catch of the four main tuna species (skipjack, yellowfin, bigeye and albacore) by Taiwanese tuna fisheries was about 240,000 MT in 2003, accounting for 12.5% of the four main tuna species total catches in WCPFC Convention area.

2. Fleet structure

2.1 LTLL

The LTLL vessels refer to those vessels mostly greater than 100 GRT and operating in distant waters of foreign EEZ and high seas. Number of LTLL vessel in WCPFC Convention area in 2004 was estimated as 137, a slight decreasing from 142 in 2003.

2.2 DWPS

Tuna purse seine fishery was introduced in 1982 and has become one of the major fleets operating in WCPO. Total number of purse seine licenses is 42, and among them 34 vessels were active and operated in the EEZ of PICs through access agreements and high seas in WCPO.

2.3 STLL

The STLL vessels operate mainly in the domestic waters and in general, smaller than 100 GRT. However, some of them have expanded their fishing grounds to distant waters in a similar pattern as LTLL vessels. In addition, they may change their fishing grounds and target species depending on fishing season or market price. The number of registered STLL vessels (<100 GRT) was estimated as about 1,060 active in 2004.

3. Catch by species, for each type of Taiwanese tuna fisheries

3.1 LTLL

Historically, most of the LTLL fleets targeted on albacore for canning, but in recent years, a higher proportion targeted on tropical species for Japanese frozen sashimi market. The major fishing grounds of LTLL fleet were located in the central and southern regions

(Figure 1). Due to a good catch of northern albacore, the northern region has become more and more important in some seasons, since 1996. Table 1 shows the catch estimate of major tuna and tuna-like species caught by LTLL fishery in recent five years (2000-2004) in WCPFC Convention area. During 2000-2004 preiod, the most dominant species was albacore, accounting for about 47% of the total catch, while tropical tuna species, bigeye and yellowfin tunas, for another 45% (Figure 2). The catches of albacore, bigeye and yellowfin tunas were 13,307 MT, 16,888 MT and 9,018 MT in 2004, respectively. Owing to the 2004 quota restriction set on bigeye tuna in IATTC management area, some of fishing vessels shifted their fishing ground to WCPFC Convention area for targeting bigeye tuna after their quota reached. Due to other reasons including increase in average SST and decrease in catch rates in EPO, that's why the catches of bigeye and yellowfin increased significantly in the WCPFC Convention area in 2004. However, total catch of bigeye tuna caught by the fleet concerned was stabilized at about 17,600 MT between 2001-2004 in Pacific Ocean. FA has perceived the current situations and decides to reinforce the fisheries management measures and to carry out fleet reduction program to decrease the fishing vessels operating in Pacific Ocean, for special considerations.

3.2 DWPS

Total catch and major species caught by this fishery in WCPO during 2000-2004 period are shown in Table 2. The most dominant species remained to be skipjack, accounting for about 85% of the total catch (Figure 3). Yellowfin tuna accounted for another 14%, and the bigeye tuna only accounted for 0.9% of the total catch. For 2004, catch of skipjack, yellowfin and bigeye tunas were 181,524 MT, 15,968 MT and 730 MT, respectively.

The major fishing grounds of DWPS fishery varied significantly with SST distributions in 2001-2004 (Figure 4). The fishing grounds in 2001 essentially located only in areas west of 180°. However, in 2002, fishing grounds extended to as far as 151°W due possibly to the impact of El Niño. During 2001-2002, fishing grounds started to move eastward and mainly located in the western and central part of the tropical Pacific Ocean (135°E-180°E, 8°N-8°S) with sporadic efforts in areas east of 180°. In 2003 and 2004, the fishing grounds moved westward and concentrated in areas west of 180°.

3.3 STLL

The STLL fishery might land their catch at domestic or foreign ports. Considering it's geographical location, catches landed at home are believed being caught mostly from WCPO including the domestic waters. The total catch of tuna and tuna-like species landed domestically by this fleet was stable in recent five years (2000-2004) and averaged at about 28,748 MT (Table 3). The dominant species caught included yellowfin tuna (34%), billfish (44%) and swordfish (11%). (Figure 5)

As to those landed at foreign ports, we acquired information on the fishing activities of our vessels in these ports from related trading companies and used these information to estimate the amount of catch from available commercial data. The bigeye and yellowfin catch estimates from the bases in the western and central Pacific Ocean in 2004 were 2,228 MT and 4,245 MT, respectively.

4. Final market destination of catches

Most of the albacore catches from LTLL vessels were landed at American Samoa and Fiji or transshipped to Thailand for canning, while the tropical tunas catches sent to Japan for sashimi market. Catches of DWPS fishery were mostly transshipped to Thailand for canning, only a small proportion was sold to Japan for katsuobushi and sashimi. Fishes caught by STLL vessels, however, were mostly sold in the domestic market or transshipped to Japan for fresh sashimi market.

5. VMS, observer and port sampling programs

5.1 The Vessel Monitoring System

The experimental vessel monitoring system (VMS) was implemented continuously from previous years for the purpose of better management of our distant waters fishing vessels. The government has encouraged LTLL vessels to install the VMS through an incentive program since July 1996. Essentially all purse seine vessels operating in the Pacific Ocean have installed VMS system for compliance with the regulation of FFA. According to the regulation issued by FA, all LTLL vessels were required to equip VMS by the end of 2004. These data collected from VMS will be used to crosscheck the fishing locations collected from logsheet system.

5.2 The Observer Program

For the purposes of better understanding the fishing activities and the bycatch issue of the longline fishery and to be in line with the international requirements for conserving

marine resources, FA has launched an experimental observer program since 2001. In 2002 and 2003, there were 6 observers each year dispatched to the three Oceans. And the number of the observer in 2004 was 9, and the number of observer will be increased in 2005. During 2002-2004 there were 2 observers dispatched to Pacific Ocean each year and some of them will be dispatch to Pacific Ocean in 2005 boarding LTLL or DWPS vessels to collect fishing and biology data. These data will be reviewed and used for scientific purposes in the near future.

5.3 Port sampling

The domestic port sampling program was launched in 1997, and carried out by OFDC staff. The purposes of this program are collecting information on fishing activities through interviewing STLL boat owners, and measurement of FK-length of tuna catch unloaded at domestic ports.

Since a significant amount of Taiwanese longliners unloading their catches at foreign ports and many international agencies have port sampling programs at those ports for many years, such as CCSBT, IATTC and SPC.

The data collected from port sampling program will be very helpful to the improvement of the data quality of Taiwanese fleet as well as the scientific researches on the species concerned. This program will be a routine work for not only collecting information of fishing activities but also the biology data such as measurement of FK-length of catch. We are willing to fully cooperate with the international or research organizations, such as CCSBT, CSIRO, IATTC, ICCAT and SPC, to implement the port sampling programs in foreign ports in the future.

5.4 Research and conservation regulation concerning tuna fisheries and endangered marine species

In order to be in accordance with the international trend on management of marine resources, our government has initiated some programs on management and conservation of certain important marine species, such as green turtle (*Chelonia mydas*) and whale shark (*Rhincodon typus*). The satellite telemetry technique has been introduced to study the migration patterns of green turtle. Also, a sanctuary area for green turtle was established in Pen-Hu Islands (Pescadores) to protect their spawning and nursery ground. We also encouraged the longliners to use circle hooks so as to avoid catching sea turtles

and launched an experimental program to study the differences in incidental take between circle hooks and traditional hooks used by fishermen.

For conservation of whale shark, FA has set up a system to collect catch, fishing location, weight and length information. And it set the total allowable catch (TAC) of 120 and 65 in 2004 and 2005 respectively. Five whale sharks have been tagged successfully by May 2005 to study their migration behavior. Figure 6 shows the migration routes collected from pop-up archival transmitting tags.

Table 1. Catch (in MT, round weight) statistics of major tuna and tuna-like species caught by LTLL fishery in WCPFC Convention area during 2000-2004 period.

Species / Year	ALB**	BET	YFT	SWO	MLS	BUM	BAM	SKJ	TOTAL
2000	10,235	1,160	1,639	227	130	52	16	265	19,151
2001	12,330	3,142	2,479	767	210	257	28	276	15,763
2002	12,796	8,741	4,953	1,274	386	231	8	143	25,331
2003	14,105	7,540	4,981	1,038	395	807	3	283	18,404
2004*	13,307	16,888	9,018	2,382	695	1,226	5	672	33,305

* Preliminary estimate

** The albacore catch listed in the table is for south Pacific.

Table 2. Catch (in MT, round weight) statistics of major tuna species caught by DWPS fishery in WCPFC Convention area during 2000-2004 period.

Year / Species	2000	2001	2002	2003	2004*
SKJ	194,499	182,531	229,415	169,492	181,524
YFT	38,579	45,853	26,068	29,058	15,968
BET	1,900	2,284	2,643	2,676	730
Total	234,978	230,668	258,126	201,226	198,222

* Preliminary estimate

Table 3. The catches (in MT, round weight) of tuna and tuna-like species of the STLL fishery landed in domestic ports of Taiwan during 2000-2004 period.

Species / Year	ALB	BET	YFT	SWO	BILL	Total
2000	944	2,092	8,376	3,147	16,456	31,015
2001	832	3,292	12,741	3,694	15,892	36,451
2002	910	2,150	9,145	2,511	10,732	25,448
2003	712	2,299	10,567	3,196	10,578	27,352
2004*	927	1,340	7,756	3,167	10,283	23,473

* Preliminary estimate

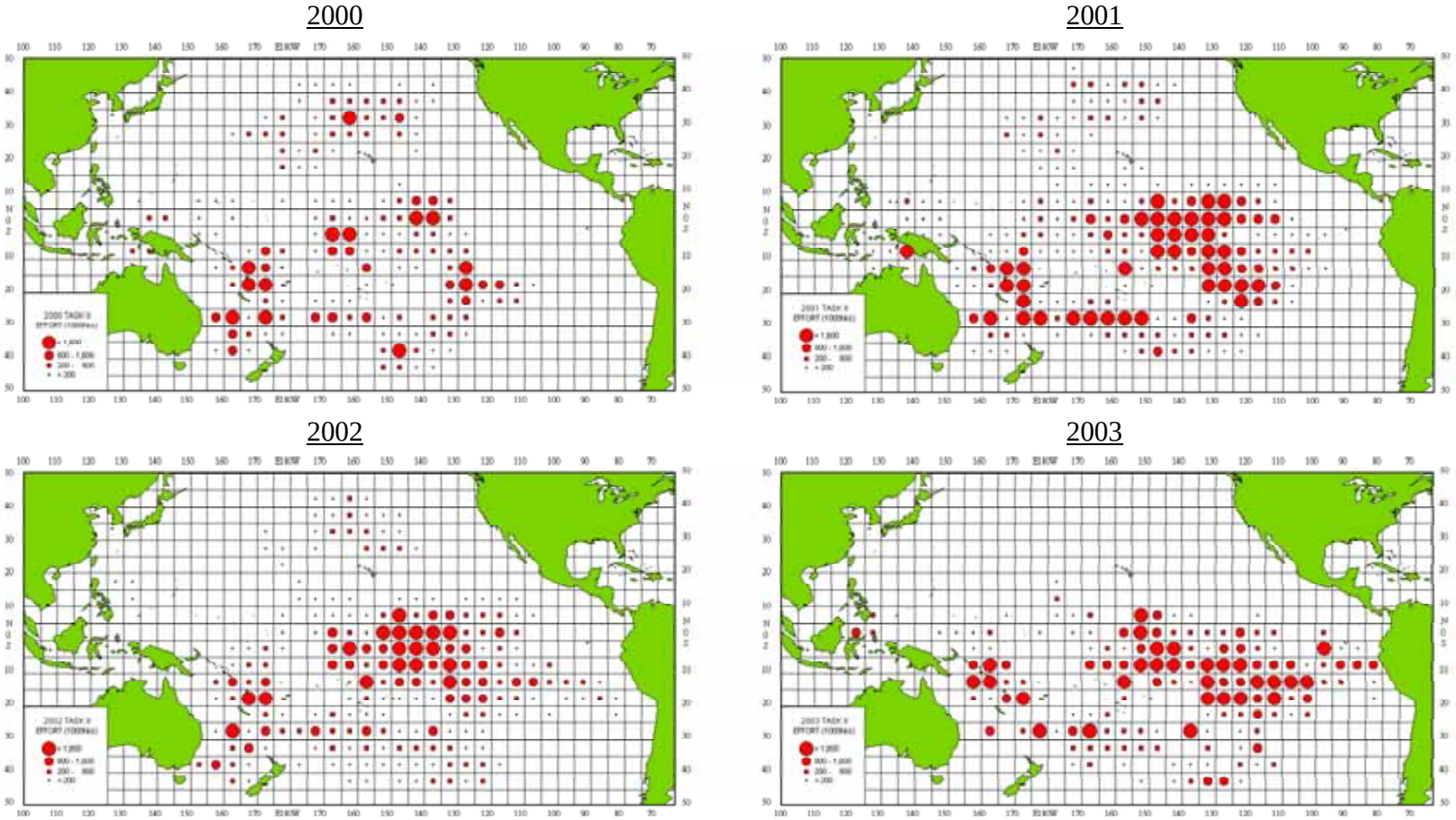


Figure 1. The effort distribution of Taiwanese LTLL fleet operating in Pacific Ocean during 2000-2003 period.

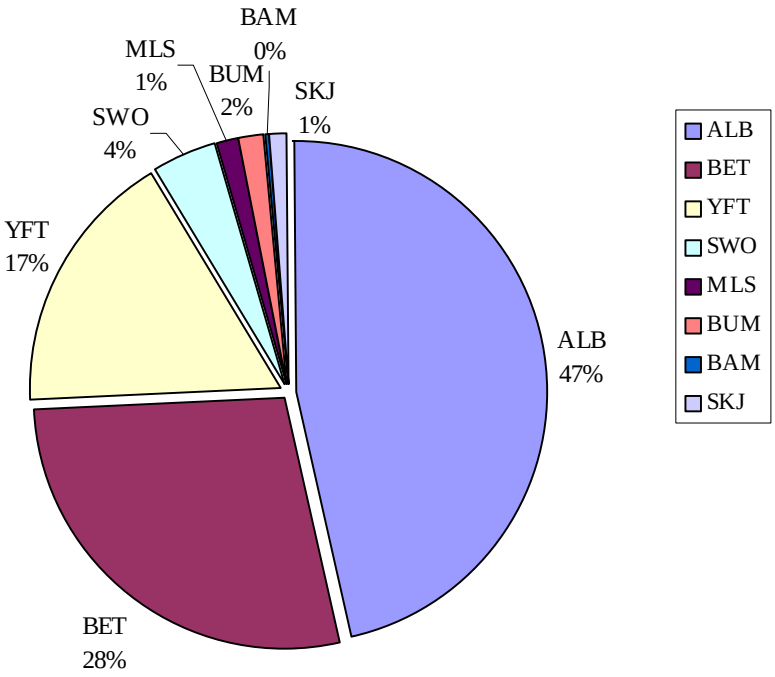
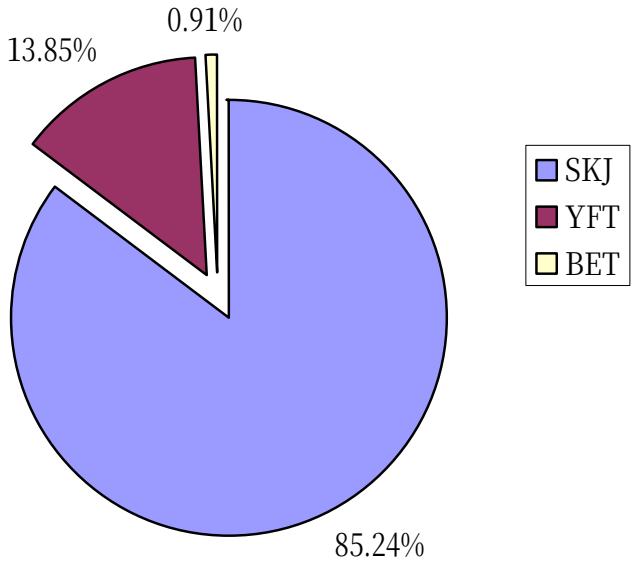


Figure 2. Mean catch percentage of major tuna and tuna-like species caught by Taiwanese LTLL fishery in WCPFC Convention area during 2000-2004 period.



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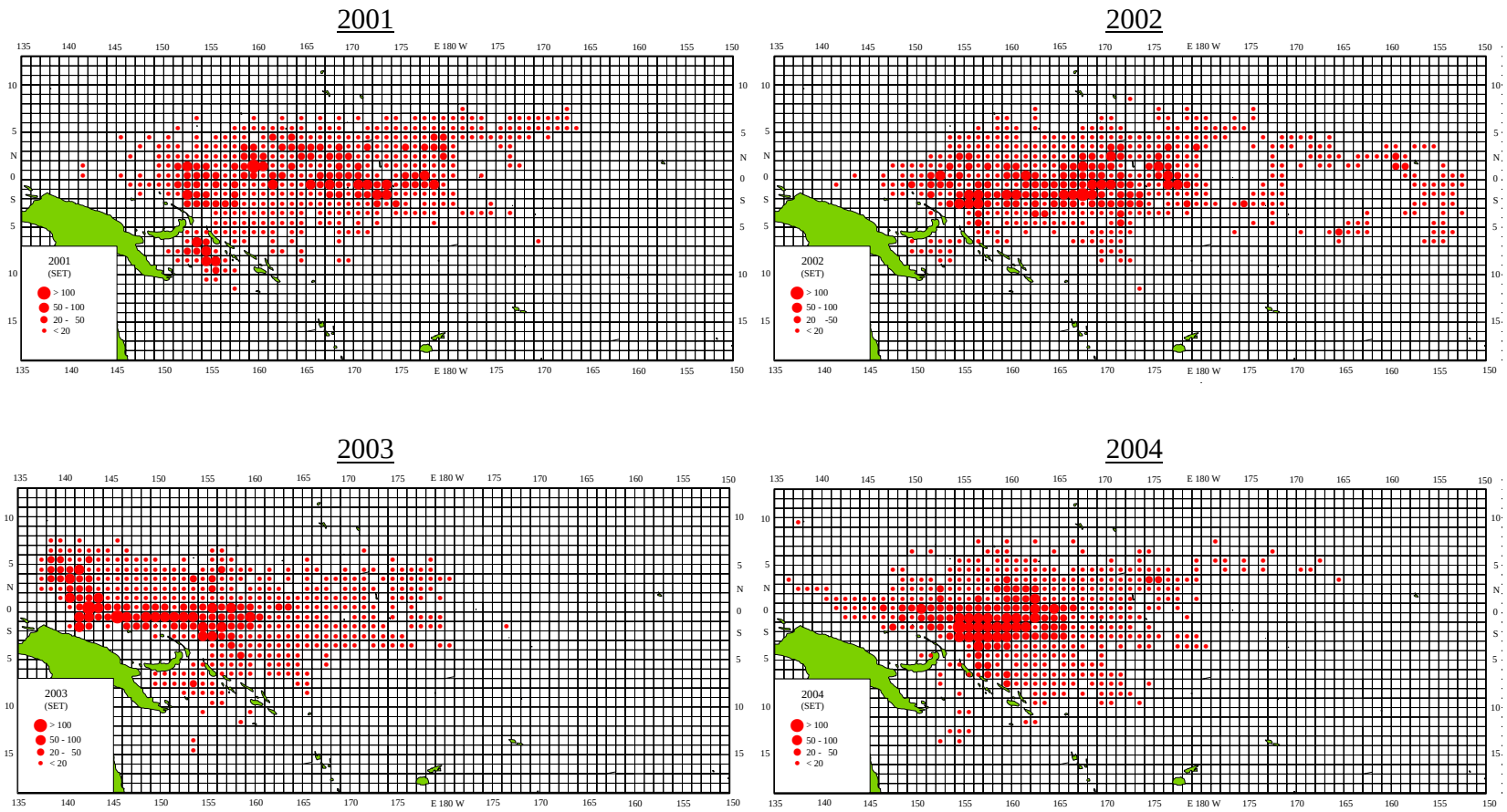

Figure 4. The effort distribution of Taiwanese DWPS fleet operating in WCPFC Convention area during 2001-2004 period.

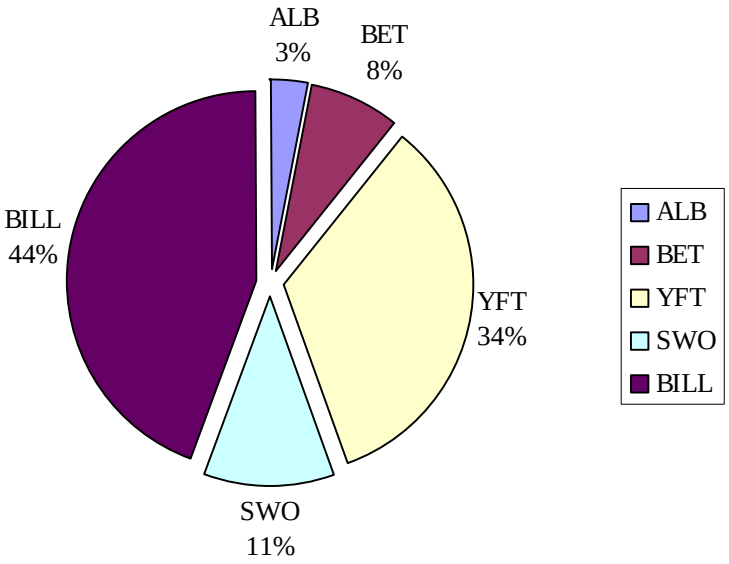

Figure 5. Mean catch composition of major tuna and tuna-like species caught by Taiwanese STLL fishery landed at domestic ports during 2000-2004 period.

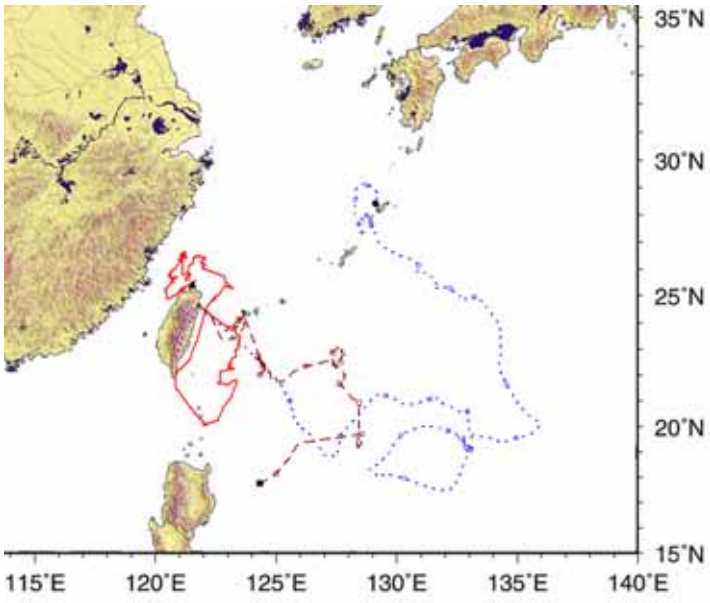

Figure 6. The migration routes of tagged whale sharks.