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Recent Status of Taiwanese Tuna Fisheries in the North Pacific Region for 2004¹

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ABSTRACT

Distant water longline (DWLL) and offshore longline (OSLL) were the two major tuna fisheries in the North Pacific Ocean. Total number of DWLL vessels in the entire Ocean was 137 in 2004 but reduced to 132 in 2005. Albacore is the major catch of DWLL in the North region. The catch has been increased significantly since 1995, but the amount is still less than 10% of the albacore catch by all the fleets in the region. Catches of 2004 is estimated as 4,061 mt, a continuous decrease since 2000. The proportion of northern catch to the entire ocean has been declined from 44% in 2000 to 23% in 2004. The size of albacore caught in DWLL for 2000-2003 ranged from 40 to 120 cm with two joint modes: roughly 70-85 cm and 90-105 cm. Albacore size from the OSLL was one mode and within the range of the second mode of DWLL. North Pacific swordfish and bluefin tuna were mainly caught by OSLL. The 2004 catch estimates were 3,167 mt and 1,714 mt, with preliminary 2005 estimations of 3,200 mt and 1,700 mt, respectively.

1.0 FISHERIES AND CATCHES

1.1. General overview

There are two major tuna fisheries currently operating in the North Pacific Ocean: the distant water longline (DWLL) and the offshore longline (OSLL) fisheries. The distant water purse seine fleets operate mainly near the equatorial areas in the North region, but mostly in the Western Central Pacific Ocean. Therefore, the following introduction will focus on the longline fisheries.

Catches of the major species concerned by ISC and the data collection system are provided in the following sections.

1.2. Distant water longline fishery

The distant water vessels refer to those vessels larger than 100 gross registered tons (GRT) mostly operated in the high seas area or in the EEZs of coastal countries under license. Total number of vessels operating in the entire Pacific region in 2004 was estimated to be about 137. The number of vessels has been reduced to 132 in 2005.

Generally speaking, the catch of albacore in the North region was very low for Taiwanese fleet before 1995. Due to opportunities of access agreement to South Pacific were constrained, the Taiwanese fishing efforts and catch have been increased thereafter. The catch however is still less than 10% of the overall catches by all the fleets in the region.

Revised catches of 2004 is estimated as 4,061 mt, a continuous decrease since 2000. The proportion of northern catch to the entire ocean has been declined from 44% in 2000 to 23% in 2004. The preliminary estimation of 2005 catch will be completed as usual in coming April, this year.

The catch of bluefin tuna in the North Pacific has been very rare and less than 1 mt for recent years. Before 2000, the catch of swordfish in the North Pacific region was low and less than 100 mt. Thereafter, the catch increased substantially to more than 1,000 mt.

Effort distribution of Taiwanese DWLL vessels operated in the North Pacific region during 2000-2003 is shown in Figure 1. These vessels fished for northern albacore only seasonally from about September to next March, and moved to the South Pacific fishing for southern albacore in other season.

1.3. Offshore longline fishery

The offshore longline (OSLL) vessels generally refer to those vessels smaller than 100 GRT (mostly 50-70 GRT). These vessels generally operated in the nearby waters of Taiwan. For convenience, the estimation of OSLL catch is categorized as catches unloaded in Taiwan domestic ports and catches unloaded in foreign ports. Table 1 shows catch estimates of the main species concerned that unloaded in domestic fishing ports, being considered as from the North Pacific region. Catches of the OSLL based and unloaded in foreign ports will be estimated in cooperation with foreign agencies or through port sampling accordingly, while appropriate.

From Table 1, the catch of albacore is generally low and fluctuated between 100 and 900 mt in the recent ten years. A preliminary estimation of 2005 catch is about 900 mt. The 2004 catch of swordfish is estimated as 3,167 mt and a preliminary estimate for 2005 is 3,200 mt.

The catch of bluefin tuna shows an increasing trend during recent ten years to the peak record of 3,000 mt in 1999 and reduces to a level of 1,500 to 2,000 mt after year 2000. The 2004 catch estimate is 1,714 mt and the preliminary 2005 estimate is 1,700 mt.

The fishing ground of OSLL vessels based at domestic ports is shown in Figure 2. The operation was mostly located in area of 110-150°E/10-30°N, especially waters south and east of Taiwan and northeast of the Philippine Islands.

1.4. Size samples from the longline fisheries

The size measurements on major tuna and tuna-like species caught by DWLL and OSLL fisheries in the North Pacific region is shown in Figure 3. Albacore caught in DWLL for 2000-2003 ranged from 40 to 120 cm with two joint modes: roughly 70-85 cm and 90-105 cm. Comparatively, albacore size from the OSLL was one mode, within the range of the second mode of DWLL.

The swordfish caught by DWLL consists clear two modes. The size from OSLL consists only one mode, but the mode covered the range of the two modes from the DWLL with the major part in the second mode.

For bluefin tuna, size measurements from domestic fish markets for OSLL shows one mode in the range of 200-240 cm.

2.0 FISHERY MONITORING AND DATA COLLECTION

2.1 Fishery-dependent data collecting

Distant water longline fishery

Two types of fishery statistical data are routinely collected from DWLL fishery: the commercial data (for estimation of total catch), and the logbook data (for stock assessment purposes). Several sources of commercial information were available from traders, Taiwan Tuna Association, Japanese market, and so on. After cross-checking and compilation, the commercial information was used to estimate total catches of the Category I data.

The logbook data include each set of catch in number and weight by species, effort deployed, fishing location, and so on, as well as the size measurement of the first 30 fish caught each day. Categories II and III data were all compiled from this data set.

Offshore longline fishery

As mentioned in previous section, two categories of OSLL are defined: OSLL that based in Taiwan and unloading their catches at domestic fishing ports (domestic-based OSLL), and that based and unloading catches at foreign ports (foreign-based OSLL). For domestic-based OSLL, the commercial landing records from local fishing markets provide the best information for estimating the ISC Category I data of total catches. Since, there was not much information to estimate total catches for foreign-based OSLL, preliminary estimations were basically made from fishing vessels activities and importing statistics to the Japanese markets.

However, logbooks have been collected by data improvement project from the fishery since 1997. At this stage, the collection is still relatively difficult and the coverage is to be improved for the compilation of Category II data.

Port sampling on both the trip information (location, catches and effort) and size of major tuna species in Tong-Kang, the largest domestic tuna-fishing port, has been, therefore, independently conducted. These data were compiled and made available for the scientific uses.

2.2 Fishery-independent data collection

2.2.1 Port sampling

Port sampling at domestic fish markets has started in 1997, collecting size data of the major tuna species (mainly bigeye and yellowfin tunas). However, because a lot of Taiwanese longliners unload their catches at foreign ports and the data reported from industry are not sufficient, there exists a need to maintain a port sampling program at foreign ports, although the cost is high. Owing to no experience in sampling at foreign fishing ports, this program started from smaller scale and was treated as a pilot one. The port sampling program in foreign ports was being launched in 2005 to collect size measurements from the vessels fishing in the North region. To make the program efficient, it is welcomed for international joint efforts concerned for better managing the fish resources.

2.2.2 Observer program

The experimental observer program for three Oceans was launched in 2001. There were 2 observers in the beginning, and increased to 6 each year in 2002-03, 9 in 2004, and to 24 in 2005. To improve the collection of reliable data, a task-force has been formulated to formally take charge of the program. In 2005, 2 trips were dispatched to the North Pacific region, to collect fishery data and size measurements, otoliths, and gonad samples of albacore. In addition, the number of observers will be increased for the three Oceans year by year.

2.2.3 VMS monitoring

Vessel monitoring system (VMS) has been installed voluntarily on some longliners during recent years. For better management of tuna fishery resources, all the large scale vessels were required to install VMS since 2005. Besides of better monitoring the vessel activities, the data could be used to verify the logbook data and to improve the data quality.

3.0 RESEARCH

Among the billfish species, National Taiwan University (NTU) has completed studies on population dynamics and stock assessment for swordfish and sailfish and is currently conducting a stock assessment study on blue marlin. Through collaborations with the Fisheries Research Institute (FRI) of Council of Agriculture (COA), and funding from the Fisheries Agency of COA, NTU is also studying the age/growth and reproductive biology of black marlin, and collecting biological data from striped marlin. A billfish tagging program is also being conducted by FRI. More results from billfish studies are expected in the near future.

Table 1. Catch estimates of North Pacific albacore, bluefin tuna and swordfish by Taiwanese fisheries during 1993-2004. DWLL stands for catches by the distant-water longline fishery, OSLL for the offshore longline fishery that unloaded in Taiwanese domestic ports.

Unit: mt

Year	Albacore		Bluefin tuna		Swordfish	
	DWLL	OSLL	DWLL	OSLL	DWLL	OSLL
1993	5	489	1	471	54	1,174
1994	83	503	-	559	-	1,155
1995	4,280	479	-	335	50	1,135
1996	7,596	113	-	956	9	1,130
1997	9,119	337	-	1,814	15	2,190
1998	8,617	193	-	1,910	20	1,900
1999	8,186	207	-	3,089	70	2,234
2000	7,898	802	-	2,780	325	2,470
2001	7,852	747	-	1,839	1,039	2,727
2002	7,055	910	-	1,523	1,633	2,511
2003	6,454	712	-	1,863	1,084	3,196
2004	4,061	927	-	1,714	1,301	3,167

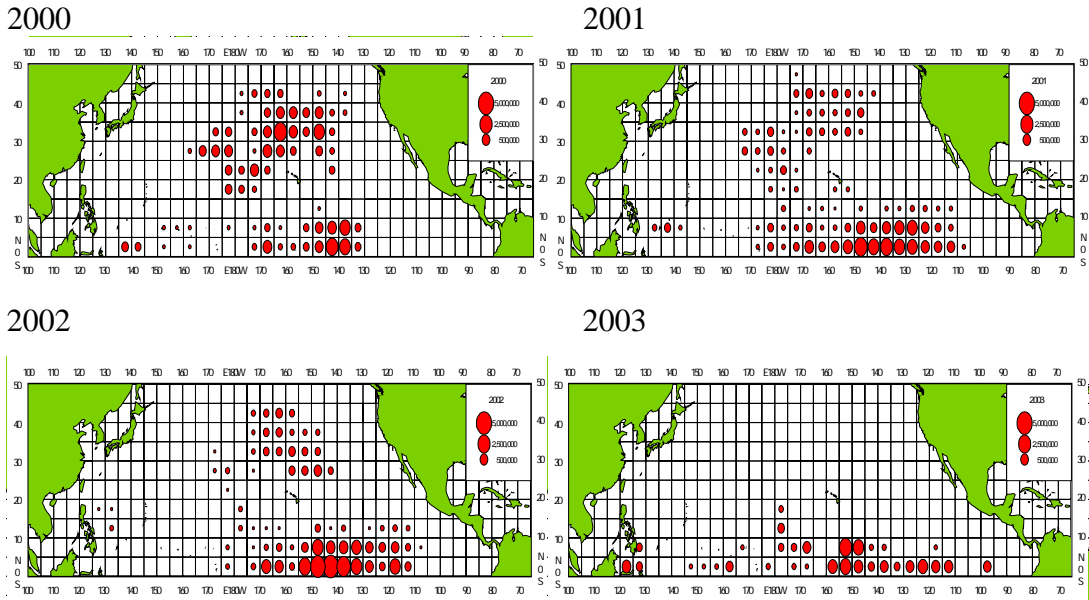


Figure 1. The effort distribution of the distant water longline fishery operated in the North Pacific region during 2000-2003. (Note: Map of 2003 is still preliminary and will be revised shortly.)

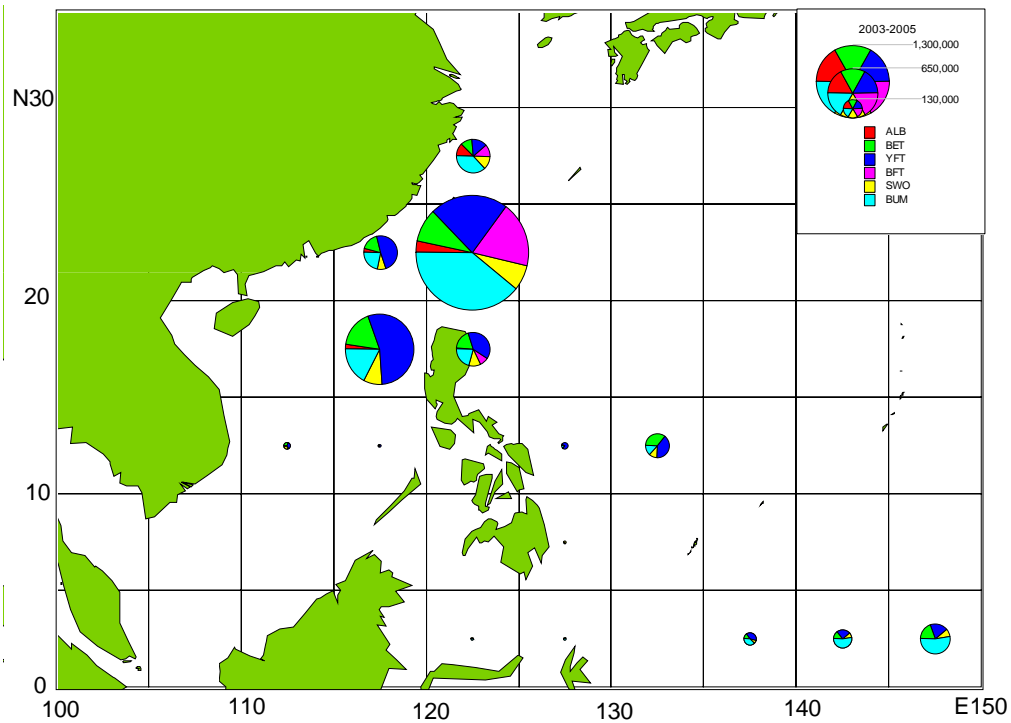


Figure 2. Distribution of catch composition of Taiwanese domestic-based offshore longline fishery in the waters around Taiwan for 2003-2005.

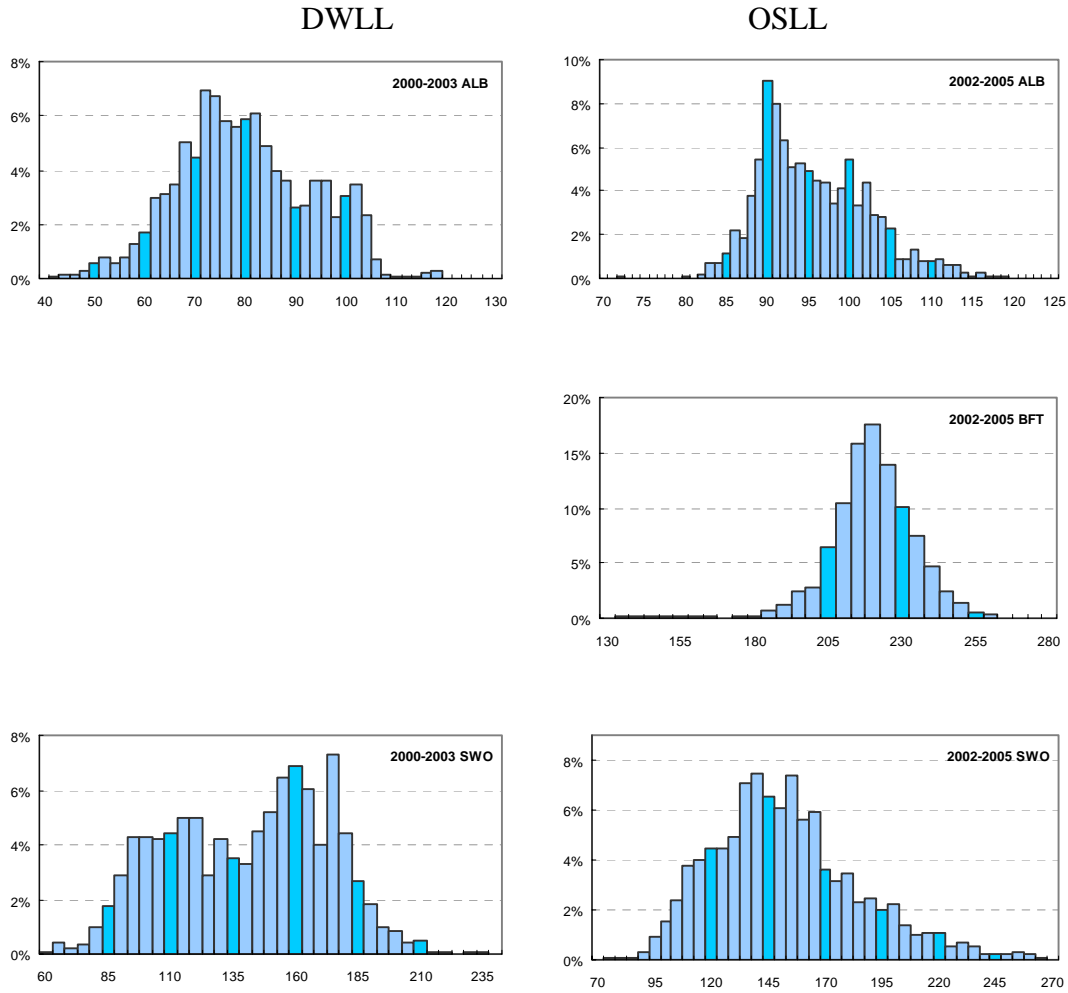


Figure 3. Length frequencies of albacore, bluefin tuna and swordfish by the distant water longline (DWLL) and offshore longline (OSLL) fisheries in the North Pacific Ocean during different periods of time (depending on the data available). The length scales vary for different species.