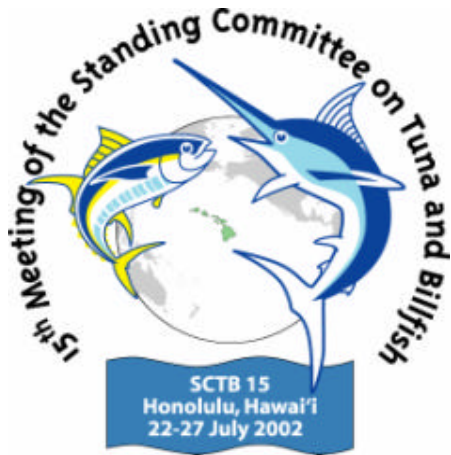
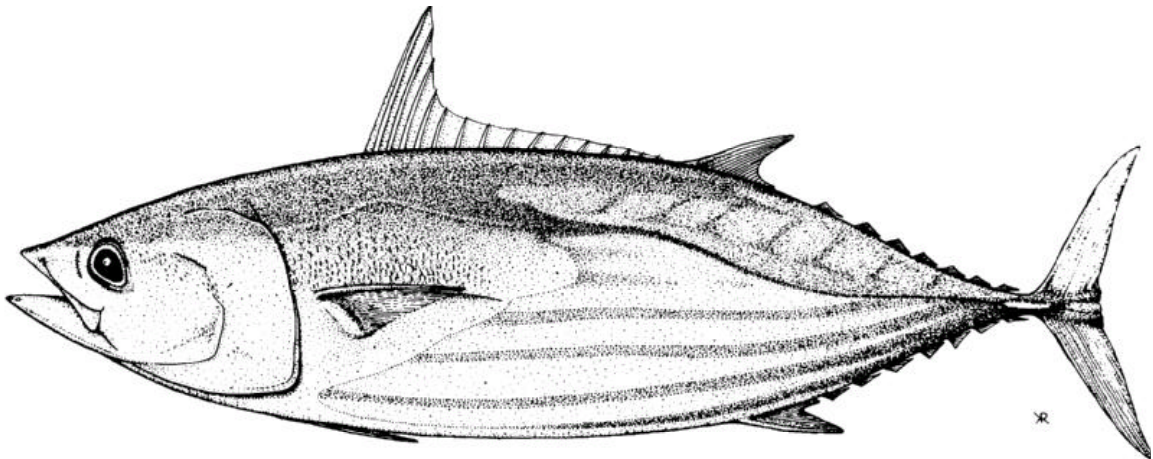


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National Tuna Fishery Report in 2002



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Introduction

Most of the Korean tuna fisheries occur in the Pacific and Indian Ocean. Tuna fishery is still the most important distant water fishery in Korea, though its fleet size kept decreasing since its initiation in mid-1970s. Over 90% of the total tuna catch occur in the Pacific region targeting skipjack, bigeye and yellowfin. All purse seiners and over 90% of the active longliners operate in the Pacific. Even though 54 longliners are registered in the IOTC area, many registered vessels migrate between the Pacific and Indian Ocean, depending on the conditions of each fishing grounds. The gear-type-based licensing in Korea, not limiting fishing grounds, enables the switches of fishing grounds for those tuna longliners.

Southern bluefin tuna (SBT) fishery is the only tuna fishery in Korea that is applied by a quota-based management system and SBT has been caught mostly in the southern Indian Ocean. SBT-targeting longliners are limited to 16 vessels among the 54 IOTC vessels. These 16 SBT vessels were determined voluntarily by fishing industries. Recent reduction of the SBT catch since 1998, when SBT attained its maximum catch, was due to the movement of SBT vessels from the Indian Ocean to the Pacific. Since the number of SBT vessels is only 16, small number of SBT vessels withdrawn from the Indian Ocean can affect significant decrease of SBT catch. According to our industry, low productivity and low SBT price in recent years have caused their recession from SBT fishery in the Indian Ocean. As a consequence, the size of fishing fleet in the Pacific could be increased during the last several years. Korea has become a full member to the CCSBT last October 2001, with an agreed national quota of 1,140 tons.

Total tuna production in the Pacific in 2001 was estimated as 236,518 mt from 203 tuna vessels, among which 178,072 and 58,446 mt were caught from 26 purse seiners and 177 longliners, respectively. Four major species comprised over 96% of total Pacific tuna catch in 2001, among which 143,722 mt was for skipjack, 50,240 mt for yellowfin, 31,473 mt for bigeye and 2,733 mt for albacore.

Total catch, for all species and all gears combined – 1997-2001

Total annual catches of all tuna and tuna-like fishes, from 1997 to 2001 by Korean vessels, all gears combined, in the whole Pacific and WCPO are listed in Table 1 and the magnitude of their discrepancy is shown in Figure 1. WCPO catches fluctuated from 183 thousand to 240 thousand metric tons averaging 200 thousand tons. Almost 89% of the total catch in the WCPO was composed of three tunas, skipjack(69.6%),

yellowfin(21.1%) and bigeye(6.8%), and among which skipjack has the highest amount. Although yellowfin and bigeye are the second largest species in quantity but represent higher commercial value than skipjack as they are caught in longline fishery and sold in sashimi market. Billfishes were incidentally caught in both purse seine and longline fisheries and among them was blue marlin dominant in catches.

Table 1. Catches of Korean tuna fishing fleets, for all species and all gears combined (1997-2001)

(unit: mt)

year	Pacific			WCPO		
	Purse seine	longline	total	Purse seine	longline	total
1997	158,974	45,791	204,765	158,974	23,767	182,741
1998	200,905	58,763	259,668	200,905	39,131	240,036
1999	141,846	44,585	186,431	141,846	27,871	169,717
2000	170,025	51,178	221,203	170,025	28,682	198,707
2001	178,072	58,446	236,518	178,072	28,499	206,571

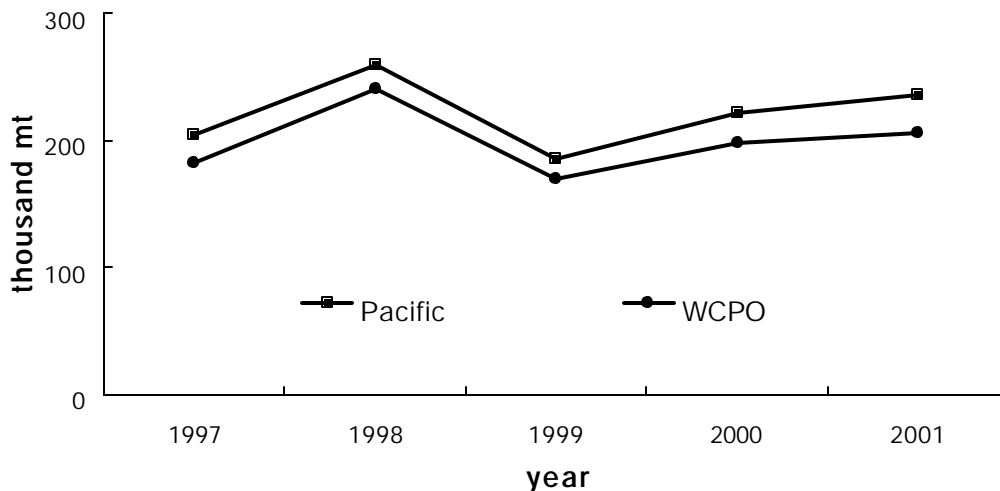


Figure 1. Trends of Korean total tuna catches between the Pacific and WCPO, all species and all gears combined (1997-2001)

Tuna catch statistics in Korea are obtained from two sources of data reports. Deep-Sea Fisheries Association (DSFA) collects total catches by gear from their industries, which become our official total catch. National Fisheries Research and Development Institute (NFRDI) collects logbook from vessels. Species composition in the catches and catch proportion between WCPO and EPO are estimated based on these logbooks. Logbook contains location, catches by species, number of hooks, etc. Direct estimation of the logbook submission rate is not available, however, it can be estimated by the proportion of nominal catches from the logbook to the total catch reported by the DSFA. For example, total longline catch in the Pacific (DSFA data) was 58,446 tons in 2001, whereas nominal catch in the logbook was 28,499 tons, representing 48.8% of the logbook coverage. Catch estimates in the WCPO can be estimated from the

geographic catch distribution in the logbook information. Figure 2 shows trends of reporting coverage or logbook submission rate that was estimated, as mentioned above. Lower rates of purse seiners in recent years will be compensated by the further collection of logbook in the future since one fishing trip in Korea lasts more than one year.

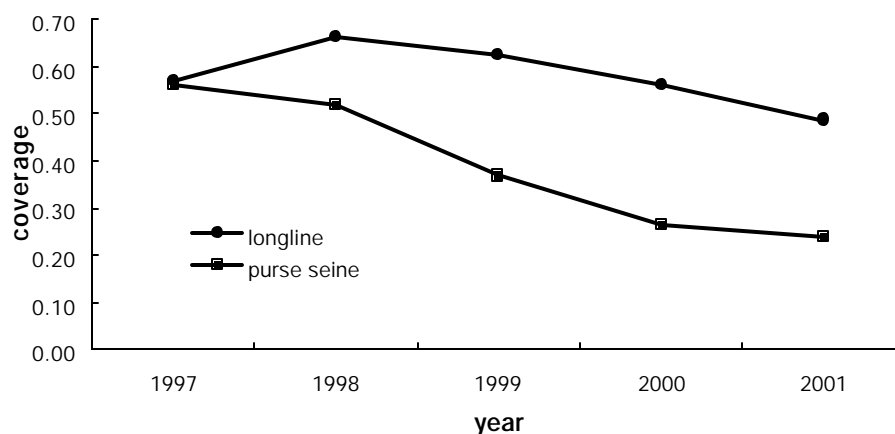


Figure 2. Estimated logbook coverage of Korean tuna fishing fleet (1997-2001)

Fleet structure

Korean tuna fishing vessels are composed of only two fishing gears, purse seine and longline. Total number of tuna vessels in Korea has been decreasing since the initiation of tuna fisheries in mid-1970s. Over 500 longliners, for example, has been reduced to around 200 in early 2000 (Table 2). And now, licensed tuna vessels are 26 purse seiners and 202 longliners in 2001, of which all purse seiners and 177 longliners operated in the WCPO. Marked increase in the longliner fishing vessels, 21 vessel increase in 1998, for example, was due to the input of longliners into the Pacific from the Indian Ocean. Regarding the vessel capacity, dominant size ranges from 300 to 500 GRT for longliners and 700 to 2000 GRT for purse seiners (Table 3).

Table 2. Number of tuna fishing vessels in Korean that has operated in the WCPO

Year	LL	PS	TOTAL
1997	148	27	175
1998	169	26	195
1999	171	26	197
2000	176	26	202
2001	177	26	203

Table 3. Size class of Korean tuna fishing fleet in 2001

<i>GTR</i> <i>By gear</i>	<i>Total</i> <i>Vessels</i>	<i>201-</i> <i>300</i>	<i>301-</i> <i>400</i>	<i>401-</i> <i>500</i>	<i>501-</i> <i>600</i>	<i>601-</i> <i>700</i>	<i>701-</i> <i>800</i>	<i>801-</i> <i>900</i>	<i>901-</i> <i>1,000</i>	<i>1,001-</i> <i>2,000</i>
LL	193	1	79	112	1	-	-	-	-	-
PS	26	-	-	-	-	-	4	2	7	13

Catch by species, for each gear type

A total of 203 vessels actively participated in fishing for tuna and tuna-like species in the Pacific Ocean including the WCPO during 2001. Total catch in the Pacific was about 206 thousand metric tons in 2001, a decrease by about 7% over the previous year's catch. Of the total catch, purse seiners caught 178 thousand tons (86%), whereas longliners caught 28 thousand tons (14%) in the WCPO.

Purse seiners have caught tunas a hundred percents in the WCPO, whereas longliners have caught tunas both in the WCPO and EPO. As mentioned above, catch production between WCPO and EPO was separated by the logbook information. At the moment, this catch separation by location can not be verified. That is, the randomness of the geographic distribution of the sampled logbook data, or whether the logbook data reflects the actual frequency of longline sets between the two regions, cannot be verified. According to the DSFA and industries, however, longline catches has been greater in the WCPO than in the EPO and they were slightly greater in the WCPO in 2001.

Though our estimated catch proportion from the logbook data was reversed to the comments from industry, 49:51 between WCPO and EPO, we understand that this proportion was the best we can logically provide.

Longline fishery

Total longline tuna production in the whole Pacific during the last 5 years has been fluctuating between 44 to 58 thousand metric tons averaging 52 thousand tons (Table 4). These catches have been produced by 148 vessels in 1997 up to 177 vessels in 2001. Catches in the WCPO ranged from 24 to 39 thousand metric tons averaging 30 thousand tons during that period. WCPO catches were rapidly increased in 1998 by 15 thousand tons and that could be matched with the increase of fishing vessels in that year.

Table 4. Korean estimated catches by species, for each gear type in the WCPO area.

(unit: mt)

species		Bigeye	Yellowfin	Albacore	Bluefin	Skipjack	Others	total
year								
1997	LL	10,915	9,649	1,528	6	1	1,668	23,767
	PS	285	37,220			121,468	0	158,974
	Total	11,200	46,869	1,528	6	121,469	1,668	182,741
1998	LL	20,910	9,631	4,843	34	1	3,713	39,131
	PS	591	59,407			136,279	4,628	200,905
	Total	21,500	69,038	4,843	34	136,280	8,341	240,036
1999	LL	16,967	6,452	874	27	2	3,550	27,871
	PS	1,725	29,804			110,317	0	141,846
	Total	18,692	36,257	874	27	110,319	3,550	169,717
2000	LL	15,956	9,319	612	12	4	2,780	28,682
	PS	87	28,517			141,421	0	170,025
	Total	16,043	37,836	612	12	141,425	2,780	198,707
2001	LL	13,869	9,475	1,909	13	5	3,228	28,499
	PS	252	34,104			143,716	0	178,072
	Total	14,120	43,579	1,909	13	143,721	3,228	206,571

The most critical step for the separation of longline catches between WCPO and EPO is the estimation of catch proportion from the submitted logbook. Catches with longitudes less than and greater than W150 were sorted and summed as EPO and WCPO catches, respectively. The estimated catch proportion between EPO and WCPO is shown in Figure 3. Since 1997, an average of 57:43 catch ratios were estimated between WCPO and EPO, whereas in 2001, slightly higher proportion was estimated in the EPO than WCPO. Although, our current estimates from the logbook data are the best information we can provide, further analysis, such as estimation of variance and verification of the sampled logbook data by the cruise charts that were not provided by industries, are considered to be necessary for better configuration of catch distribution.

Species composition in the WCPO longline fisheries includes bigeye, yellowfin, albacore, blue marlin, etc., among which these four species comprised 96% of the total catch in this region (Figure 4). Average catches of those four species during the last five years were 15.7, 8.9, 2.0, and 1.9 thousand metric tons in that order. Estimated catches by species in the WCPO are listed in Table 4.

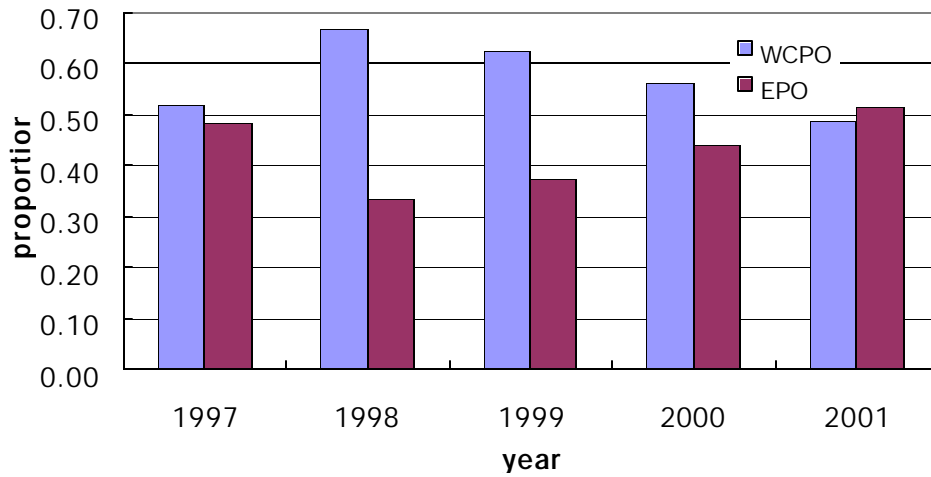


Figure 3. Proportion of Korean longline catches between WCPO and EPO

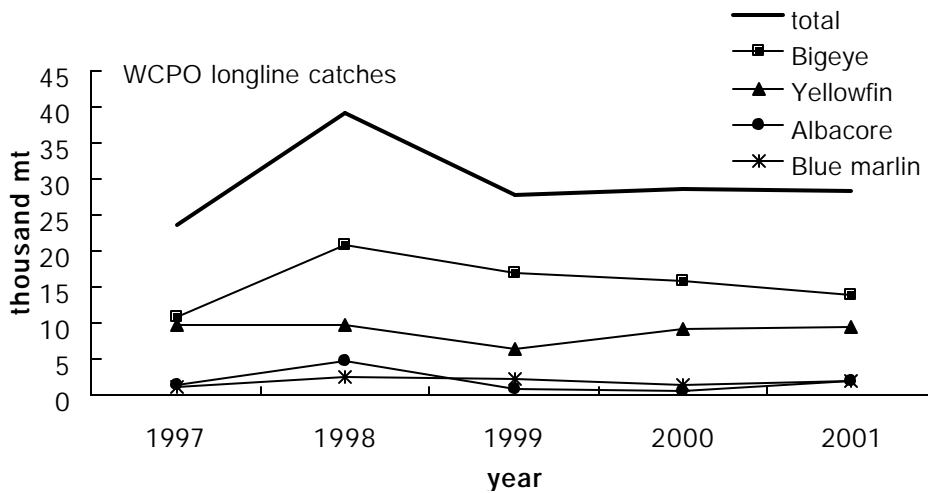


Figure 4. Korean longline catches by species in the WCPO during 1997-2001

Purse seine fishery

Purse seiners have been concentrating their fishing activities in the western Pacific through the year. Since 1990, there has been a steady decrease in number of the purse seiners operating in this region and only 26 purse seiners remained in 2001. The total catches from this fishery during the last five years ranged from 142 to 201 thousand metric tons averaging 170 thousand tons, among which skipjack and yellowfin tuna comprised 77.1% and 22.8% of total catch, respectively. Estimated catches by species in the WCPO are listed in Table 4 and Figure 5 shows annual trends of these two species.

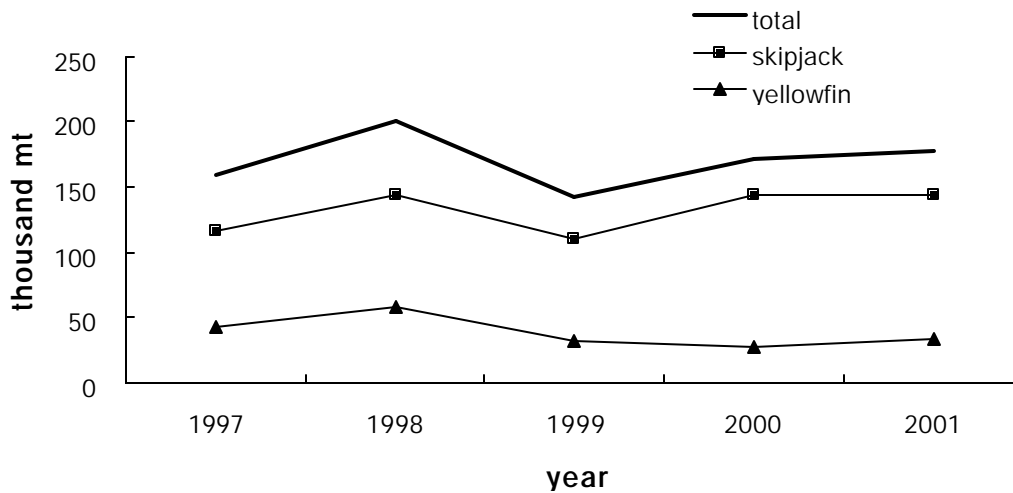


Figure 5. Korean purse seine catches by species in the WCPO during 1997-2001

Billfish catches

Billfishes that were caught incidentally by Korean longliners in the Pacific were blue marlin, swordfish, striped marlin, black marlin and sailfish (Table 5). In 2001, total catch of billfishes was 3,123 mt, showing 11% of the total longline catch, which increased by 16.1% compared with 2000. Blue marlin was dominant among them, comprising 60% of the total billfish catch, followed by swordfish and striped marlin, with 22% and 7 %, respectively. In 2001, swordfish and blue marlin increased by 269 mt and 1,779 mt. But striped marlin and sailfish decreased by 508 mt and 184 mt to compared with the previous year. Sailfish is least proportion among billfish species in 2001.

Table 5. Total catch of Billfishes by Korean longliners in the WCPO area.

(unit: mt)						
Year	Blue marlin	Sword fish	Striped marlin	Black marlin	Sail fish	total
1997	1,094	279	155	81	3	1,611
1998	2,525	483	386	174	10	3,578
1999	2,153	874	344	95	9	3,474
2000	1,524	955	156	53	2	2,690
2001	2,020	875	110	117	1	3,123

Final market destination of catches

Most tuna catches from Korean longline fishery, over 90% in the case of the year 2001, were exported as frozen to Japan for sashimi market, although the annual total amount of export usually depended on the market price in Japan. About a half of the tuna

catches from purse seine fishery are sold in Japanese market for canning and about a half of skipjack and yellowfin catches are processed in local canneries for domestic consumption. (Two tuna companies own canneries in Korea.) The proportion mentioned above, of course, varies by the price of tuna at Japanese market.

Future prospects and developments

Observer program

Korean government has just initiated observer program for international fisheries including tuna fisheries to meet the plausible requirements of some relevant regional fisheries bodies in the future. At its initial stage, the scope of observer program is small but will be gradually expanded to cover all necessary areas of fisheries.

Data reporting system

NFRDI is reconstructing database system for handy manipulation and analysis of fisheries data by fishery scientists. Old data files will be revisited and reviewed for the correction or verification of the existing statistics. Therefore, we do not exclude a possibility of minor correction in our previous statistics. However, this can be interpreted as a strenuous effort for Korea to collaborate with all regional fisheries organizations for the better understanding of our fishery statistics.