

# Korean Tuna Fisheries in the Western Pacific Ocean

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## Tuna Fisheries

A total of 184 tuna fishing vessels were active for catching tuna and tuna-like species in the Pacific Ocean including the SPC area during 1996 (Table 1). The total fishing vessels, which remained unchanged to the 1995 vessels, consisted of 156 longliners and 28 purse seiners, showing an increase of two vessels for longliners and a decrease of two vessels for purse seiners compared with the previous year's figures, respectively.

Tuna longliners range from 200 to 700 gross tonnage (GRT) and most of vessels are in the size range of 400~500 GRT. The purse seiners are in a broad range between 800 GRT and 2,000 GRT and the vessels of 1,000~2,000 GRT account for more than fifty percent.

Total production of tunas and tuna-like species from the vessels in the SPC area during 1996 was estimated to be 178,400 metric tonnes, a decrease of 12.8% over the previous year's catch. The 1996 catch from longline and purse seine fisheries presented for 16.6% and 83.4% of the total volume, respectively.

### Longline fishery

Longliners are operating through the whole tropical areas in the Pacific Ocean and bigeye tuna have been dominant in the longline catch. In 1996, a total of 156 longliners participated in fishing for tunas and billfishes in the Pacific Ocean. The 1996 total catch of longline fishery in the SPC area from the vessels was estimated to be about 29,600 metric tons, an increase of 1.2% over the previous year's volume (Table 1). The annual catch of this fishery since 1989, until

now shows trend of a two-year fluctuating cycle. For instance, annual total catch in 1990 was up 42% from the 1989 catch and in 1991 down 30% over the previous year's catch.

Species composition of longline catch in 1995 consisted of 46.8%, 39.9%, 1.3% and 12.1% for bigeye, yellowfin, albacore and other species including billfishes, respectively (Table 2). Catch of bigeye was down 10% to 13,800 tons from 15,400 tons in 1996, whereas yellowfin catch showed 24.4% increase to 11,800 tons over 9,500 tons in previous year. An increase in the 1996 catch was shown in albacore catch of 370 tons in the last five years when the catch of this species was at very low level less than 200 tons per annum.

Catch per unit effort (CPUE) of Korean longline fishery in 1996 was calculated to be 1.39 fish/100 hooks, the same level to the 1995 value (Table 2). CPUE's values in 1996 by species showed that bigeye decreased to 0.56 fish/100 hooks from 0.61 fish/100 hooks in 1995 but yellowfin increased to 0.67 fish/100 hooks over the value of 0.44 fish/hooks in 1995.

Fig. 1 shows distribution map of Korean tuna longline fishery in the whole Ocean including the Pacific Ocean in 1995. Fishing grounds were mainly distributed in the central tropical area between 10°N and 15°S through the whole Pacific Ocean, showing dense distribution regions in the central Pacific; 0~10°S, 150°E~160°W.

#### Purse seine fishery

Purse seiners have been concentrating their fishing in the western Pacific through the year and skipjack has always prevailed in catch composition. In 1996, a total of 28 purse seiners operated around the SPC area (Table 1). The total catch of this fishery in 1996 amounted to about 148,800 metric tons, a decrease of 15.2% from the 1995 catch. Skipjack was dominant species in the catch composition as in the past years, accounting for 87.3% of the total catch (Table 3). Catch by species from this fishery during 1996 showed that skipjack was 129,900 metric tons, a 5.8% decrease over the 1995 volume and yellowfin was

down 49.7% to 18,900 metric tons compared with the previous year's figure (Table 3).

The fishing grounds of Korean purse seine fishery in 1995 are shown in Fig. 2. Good distribution areas were located in the fishing grounds: 4°N~2°S, 142°~156°E. The fishing areas extended eastward, reaching near 172°E.

### **Research Activities**

Works on data collection and compilation for catch and effort statistics on tuna longline and purse seine fisheries were continued under responsibility of the National Fisheries Research and Development Institute (NFRDI) for the scientific purposes during 1996. Fishery statistics for longline data on catch and fishing effort by species for 1995 are being compiled by the 5°x5° area and are under processing in the same manner as previous years for publication. On the other hand, Korean purse seine fishery statistics from 1980 to 1995, compiled by the 1°x1° area, were provided recently to SPC as well as FAO.

Biological sampling from Korean purse seiners was carried out at domestic sites once a month during 1996 to obtain size data and information on reproductive biology of yellowfin and skipjack.

Table 1. Korean fisheries statistics for the Pacific tunas in the SPC area

Year	Vessel active			Catch (MT)		
	LL	PS	Total	LL	PS	Total
1975	253		253	33,262		33,262
1976	257		257	56,196		56,196
1977	217		217	50,863		50,863
1978	223		223	43,236		43,236
1979	216		216	52,045		52,045
1980	211	2	213	50,405	544	50,949
1981	209	3	212	35,582	2,044	37,626
1982	121	10	131	30,654	12,209	42,863
1983	102	11	113	23,086	16,216	39,302
1984	96	12	108	22,104	14,183	36,287
1985	94	11	105	40,012	11,279	51,291
1986	134	13	147	41,122	27,732	68,854
1987	138	20	158	38,590	58,752	97,342
1988	124	23	147	34,954	79,397	114,351
1989	152	30	182	25,134	115,754	140,888
1990	182	39	221	35,662	173,343	209,005
1991	220	36	256	25,056	227,518	252,574
1992	166	36	202	30,243	182,287	212,530
1993	148	34	182	25,735	126,648	152,383
1994	160	32	192	33,378	195,004	228,382
1995	154	30	184	29,232	175,464	204,696
1996	156	28	184	29,583	148,816	178,399

LL : Longline, PS : Purse seine

LL and PS vessels are from the entire Pacific Ocean including the SPC area. Longline catches are re-estimated by the National Fisheries Research and Development Institute (NFRDI) on the basis of data (statistical sea-block, 5° longitude x 5° latitude) compiled from Korean tuna vessels' logsheets.

Table 2. Catch and CPUE statistics for longliners of Korea in the SPC area

Year	Hooks	Albacore		Bigeye		Yellowfin		Others	Total	
		Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	Catch	CPUE
1975	57,102	6,261	0.19	13,543	0.70	9,529	0.39	3,929	33,262	1.44
1976	86,867	9,008	0.71	20,176	0.57	15,118	0.62	11,894	56,196	2.09
1977	92,492	11,454	0.70	15,978	0.62	16,179	0.85	7,252	50,863	2.31
1978	56,661	11,302	1.45	7,878	0.65	13,812	1.07	10,244	43,236	3.37
1979	90,883	11,046	0.72	12,448	0.51	18,421	0.98	10,130	52,045	2.33
1980	93,835	9,640	0.61	13,106	0.38	22,795	0.87	4,864	50,405	1.96
1981	96,735	13,153	0.89	7,838	0.26	10,245	0.37	4,346	35,582	1.64
1982	71,750	11,499	1.00	6,988	0.35	8,954	0.55	3,213	30,654	2.03
1983	45,162	6,997	1.17	5,923	0.46	8,445	0.78	1,721	23,086	2.52
1984	52,994	5,212	0.68	7,086	0.47	6,792	0.59	3,014	22,104	1.87
1985	90,521	12,935	0.79	10,022	0.52	10,047	0.60	7,008	40,012	2.02
1986	67,313	15,677	0.91	10,156	0.54	9,532	0.68	5,757	41,122	2.24
1987	68,239	6,921	0.35	15,119	0.70	10,059	0.70	6,491	38,590	1.79
1988	76,461	6,171	0.40	11,928	0.48	10,835	0.58	6,020	34,954	1.56
1989	66,546	3,905	0.15	9,774	0.42	7,841	0.49	3,614	25,134	1.14
1990	73,216	3,062	0.09	15,898	0.69	12,218	0.62	4,484	35,662	1.48
1991	53,452	1,224	0.15	12,103	0.88	8,247	0.55	3,482	25,056	1.60
1992	62,125	195	0.24	14,860	0.79	11,212	0.81	3,976	30,243	1.95
1993	56,190	79	0.11	12,580	0.77	8,118	0.61	4,958	25,735	1.60
1994	76,380	95	0.11	19,603	0.86	9,794	0.37	3,886	33,378	1.44
1995	81,831	39	0.19	15,389	0.61	9,483	0.44	4,321	29,232	1.39
1996	73,420	370	0.09	13,846	0.56	11,801	0.67	3,566	29,583	1.39

Units : hooks in thousands, catch in MT and CPUE in numbers of fish per 100 hooks

1. Catches for 1975-1980 were determined as follows : the numbers of fish caught in the SPC area, determined from logbook data aggregated by 5° × 5° by month published in NFRDI (1980, 1981, 1985), were multiplied by average weights and divided by coverage rates.
2. Catches for 1981-1996 were determined as follows : weights of fish caught in the SPC area, determined from logbook data aggregated by 5° × 5° , were divided by coverage rates. The average weights (kg) and coverage rates by species are presented in Table 4.

Table 3. Catch statistics for purse seiners of Korea in the SPC area

Year	Haul	Skipjack	Yellowfin	Bigeye	Others	Total
1980	34	476	68			544
1981	209	1,462	582			2,044
1982	568	10,167	2,042			12,209
1983	409	15,417	799			16,216
1984	767	13,767	416			14,183
1985	570	9,655	1,624			11,279
1986	883	25,305	2,427			27,732
1987	1,749	40,918	17,383	410	41	58,752
1988	1,900	64,032	15,365			79,397
1989	2,533	80,903	34,532	234	85	115,754
1990	4,187	138,460	34,765	118		173,343
1991	8,304	171,951	55,416	4	147	227,518
1992	7,502	115,290	66,982	15		182,287
1993	6,208	73,989	52,659			126,648
1994	6,352	145,541	49,463			195,004
1995	5,301	137,848	37,616			175,464
1996	1,913	129,888	18,928			148,816

Table 4. Average weight and coverage rate by species for longliners of Korea in the SPC area

Year	Average weight (kg)				Coverage rate			
	Albacore	Bigeye	Yellowfin	Others	Albacore	Bigeye	Yellowfin	Others
1975	20.1	53.9	38.2	29.9	0.0291	0.1338	0.0761	0.0714
1976	18.6	45.7	37.0	35.3	0.2248	0.1989	0.2349	0.0940
1977	14.3	33.0	27.8	28.4	0.3422	0.5018	0.5702	0.2186
1978	15.1	34.6	30.9	27.6	0.6102	0.8979	0.7557	0.1880
1979	14.5	34.0	27.4	36.9	0.2711	0.4002	0.4189	0.1479
1980	17.3	36.5	30.7	32.7	0.6221	0.5903	0.6628	0.3820
1981					0.3700	0.4028	0.3252	0.3660
1982					0.4099	0.4958	0.5077	0.4473
1983					0.6527	0.5663	0.5815	0.5390
1984					0.6707	0.8203	0.7916	0.5590
1985					0.3807	0.8198	0.7020	0.2923
1986					0.2752	0.8123	0.7724	0.3101
1987					0.3860	0.8540	0.8228	0.4604
1988					0.5863	0.8904	0.8912	0.4707
1989					0.3127	0.9959	0.9213	0.5968
1990					0.2339	0.8957	0.8082	0.5035
1991					0.8828	0.9658	0.7956	0.5154
1992					-	0.7605	0.7255	0.4745
1993					-	0.8263	0.7778	0.4758
1994					-	0.4784	0.3147	0.3386
1995					0.8272	0.7567	0.5668	0.6257
1996					0.2865	0.0927	0.0851	0.0583

Impossible to estimate the coverage rate

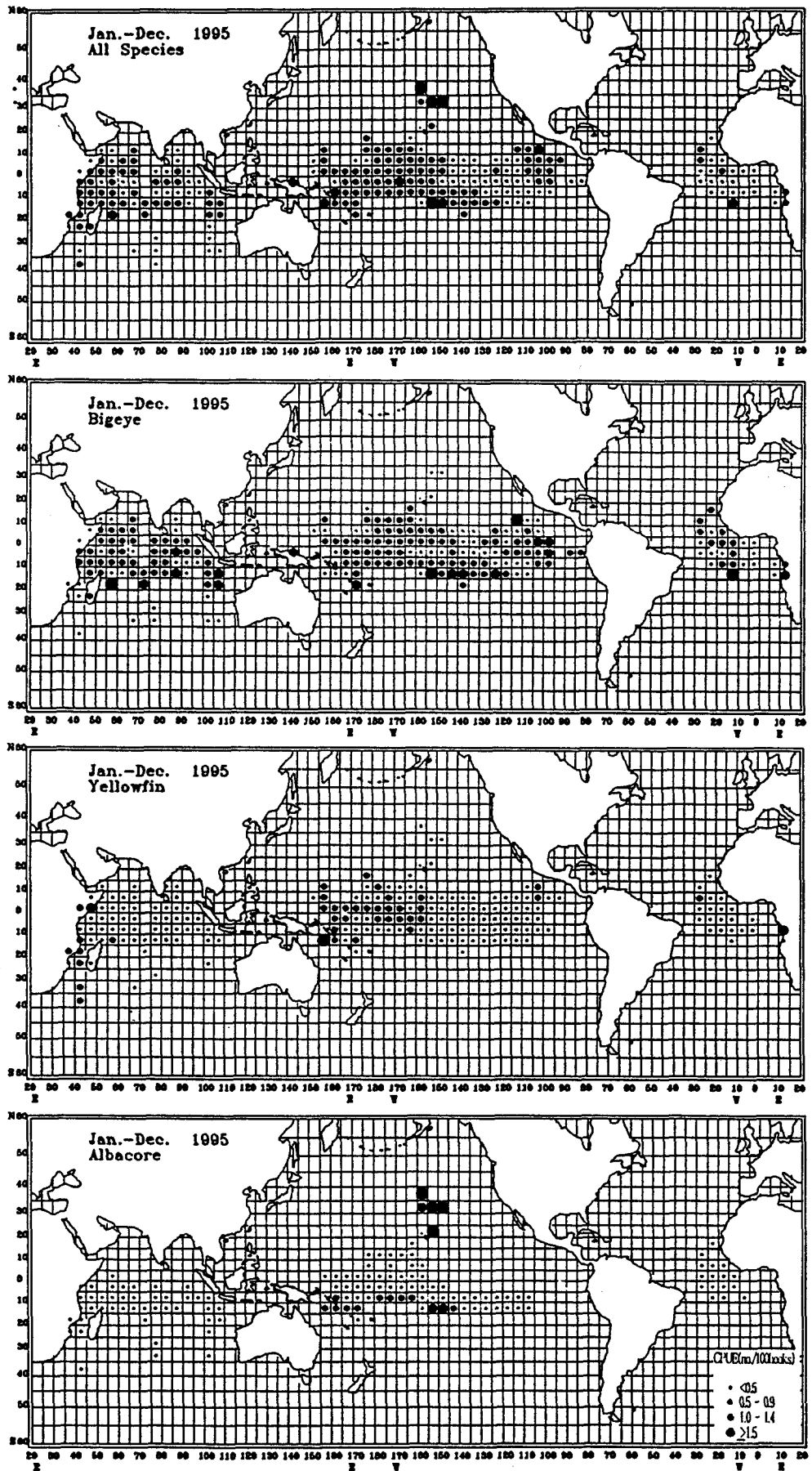


Fig. 1. Distribution of CPUE (fish per 100 hooks) for Korean tuna longline fishery in the Pacific, 1995.



Fig. 2. Distribution of CPUE (mt/set) for Korean tuna purse seine fishery in the Pacific, 1995.

