

NATIONAL TUNA FISHERIES REPORT

ELEVENTH MEETING OF THE STANDING COMMITTEE ON TUNA AND BILLFISH

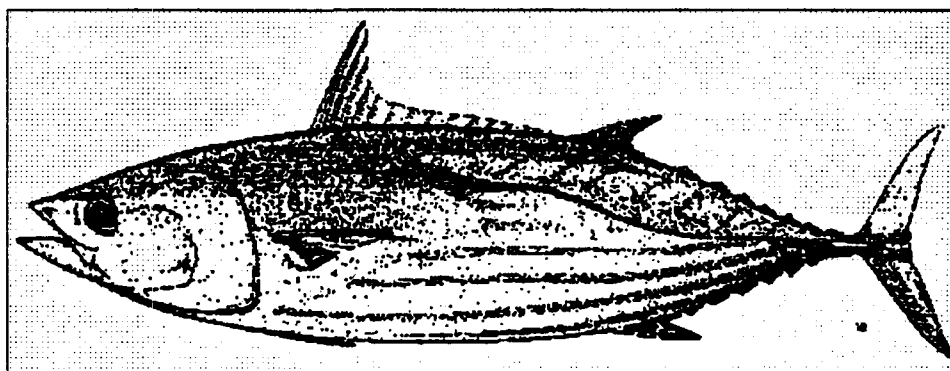
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BACKGROUND PAPER

Korean Tuna Fisheries in the Western Pacific Ocean

Yeong-Chull Park

*National Fisheries Research and Development Institute (NFRDI)
Pusan, Republic of Korea*



Background paper presented in the 11th Meeting of the Standing Committee on the Tuna and Billfish

Tuna Fisheries

Korean tuna fisheries operated a total of 175 vessels (148 longliners and 27 purse seiners) for catching tuna and tuna-like species in the Pacific Ocean including the SPC area during 1997 (Table 1). Compared to previous year, longliners decreased by 8 vessels and purse seiners by 1 vessel.

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 1,500 GRT.

Total catch of tunas and tuna-like species from the vessels in the SPC area during 1997 was estimated to be about 194,800 mt, an increase of 9.2% over the previous year's catch (Table 1). Of the total catch, 159,469 mt (81.9%) was made by purse seiners and 35,316 mt (18.1%) by longliners.

Longline fishery

Longliners were operating through the whole tropical areas in the Pacific Ocean in 1997, a total of 148 longliners participated in fishing for tunas and billfishes. The 1997 total catch of longline fishery in the SPC area was estimated to be about 35,000 mt, an increase of 19.4% over the previous year's catch (Table 1). From 1988 onward, the longline catches maintained stable levels between 25,000 mt and 35,000 mt.

Species composition of longline catch in 1997 consisted of 41.2%, 34.7%, 5.0% and 19.1% for bigeye, yellowfin, albacore and other species including billfishes, respectively (Table 2). Catch of bigeye increased by 5.1% to 14,600 mt from 13,800 mt in 1996 and that of yellowfin also showed 4.0% increase to 12,300 mt compared to previous year. An considerable increase in albacore catch was shown in 1997.

Catch per unit effort (CPUE) of Korean longline fishery in 1997 was calculated to be 1.77 fish/100 hooks (Table 2), an increase by 27.3% compared to 1996. CPUE by species showed that bigeye and yellowfin tuna increased to 0.77 fish/100 hooks from 0.56 fish/100 hooks and 0.82

fish/100 hooks from 0.67 fish/hooks in 1996, respectively.

Fishing area distribution indicated that Korean tuna longline fishery was operating in wide area of the Pacific Ocean between 20°N and 20°S, and albacore fishing ground was formed in the north to the Hawaiian Islands in recent years (Fig. 1).

Purse seine fishery

Purse seiners have been concentrating their fishing in the western Pacific through the year. Since 1990, there has been a steady decrease in number of Korean purse seiners operating in this region. In 1997, a total of 27 purse seiners were active around the SPC area (Table 1). The total catch of this fishery in 1997 amounted to about 159,500 mt, an increase of 7.2% from the 1996 catch.

Skipjack was dominant species in the catch composition as in the past years, accounting for 72.7% of the total catch (Table 3). Yellowfin contributed to 27.0% of the total catch and other species to less than 1%. Catch by species from this fishery showed that skipjack was 116,000 mt, a 10.7% decrease over the 1996 catch and yellowfin was up 127.4% to 43,000 mt compared with the previous year's figure (Table 3).

Fishing area by Korean purse seiners extended eastward in recent years, compared to late 1980s. In 1997, purse seiners were operating in the same fishing grounds as in previous year. Higher CPUE distribution was shown in the area between 2°N~8°S, 138°~170°E (Fig. 2).

Research Activities

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 1997. Fishery statistics for longline data on catch and fishing effort by species for 1996 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 to FAO.

Biological sampling from Korean purse seiners has been carried out at domestic landing sites once a month since November 1993 to obtain size data (Fig. 3) 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
1997	148	27	175	35,316	159,469	194,785

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	CPUE	Catch	CPUE
1975	57,102	6,261	0.19	13,543	0.70	9,529	0.39	3,929	0.39	33,262	1.44
1976	86,867	9,008	0.71	20,176	0.57	15,118	0.62	11,894	0.62	56,196	2.09
1977	92,492	11,454	0.70	15,978	0.62	16,179	0.85	7,252	0.85	50,863	2.31
1978	56,661	11,302	1.45	7,878	0.65	13,812	1.07	10,244	1.07	43,236	3.37
1979	90,883	11,046	0.72	12,448	0.51	18,421	0.98	10,130	0.98	52,045	2.33
1980	93,835	9,640	0.61	13,106	0.38	22,795	0.87	4,864	0.87	50,405	1.96
1981	96,735	13,153	0.89	7,838	0.26	10,245	0.37	4,346	0.37	35,582	1.64
1982	71,750	11,499	1.00	6,988	0.35	8,954	0.55	3,213	0.55	30,654	2.03
1983	45,162	6,997	1.17	5,923	0.46	8,445	0.78	1,721	0.78	23,086	2.52
1984	52,994	5,212	0.68	7,086	0.47	6,792	0.59	3,014	0.59	22,104	1.87
1985	90,521	12,935	0.79	10,022	0.52	10,047	0.60	7,008	0.60	40,012	2.02
1986	67,313	15,677	0.91	10,156	0.54	9,532	0.68	5,757	0.68	41,122	2.24
1987	68,239	6,921	0.35	15,119	0.70	10,059	0.70	6,491	0.70	38,590	1.79
1988	76,461	6,171	0.40	11,928	0.48	10,835	0.58	6,020	0.58	34,954	1.56
1989	66,546	3,905	0.15	9,774	0.42	7,841	0.49	3,614	0.49	25,134	1.14
1990	73,216	3,062	0.08	15,898	0.69	12,218	0.62	4,484	0.62	35,662	1.48
1991	53,452	1,224	0.15	12,103	0.88	8,247	0.55	3,482	0.55	25,056	1.60
1992	62,125	195	0.24	14,860	0.79	11,212	0.81	3,976	0.81	30,243	1.95
1993	56,190	79	0.11	12,580	0.77	8,118	0.61	4,958	0.61	25,735	1.60
1994	76,380	95	0.11	19,603	0.86	9,794	0.37	3,886	0.37	33,378	1.44
1995	81,831	39	0.19	15,389	0.61	9,483	0.44	4,321	0.44	29,232	1.39
1996	73,420	370	0.09	13,846	0.56	11,801	0.67	3,566	0.67	29,583	1.39
1997	68,241	1,748	0.08	14,557	0.77	12,267	0.82	6,744	0.82	35,316	1.77

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 1981-1997 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.

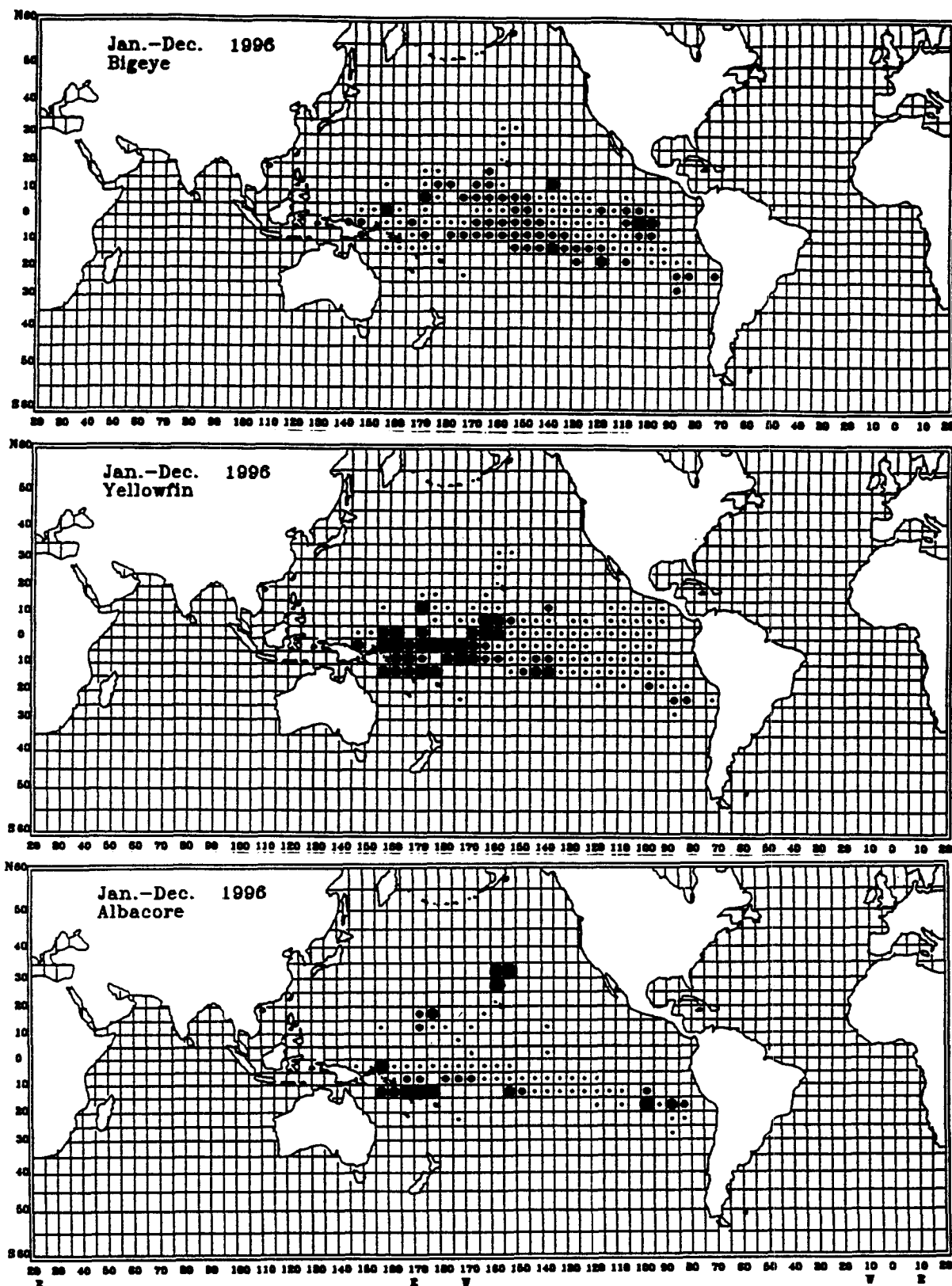
Table 3. Catch statistics for purse seiners of Korea in the SPC area

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	5,374	129,878	18,928			148,816
1997	5,018	115,927	43,047		495	159,469

**Table 4. Coverage rate by species for longliners of Korea
in the SPC area**

Year	Coverage rate			
	Albacore	Bigeye	Yellowfin	Others
1975	0.0291	0.1338	0.0761	0.0714
1976	0.2248	0.1989	0.2349	0.0940
1977	0.3422	0.5018	0.5702	0.2186
1978	0.6102	0.8979	0.7557	0.1880
1979	0.2711	0.4002	0.4189	0.1479
1980	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	0.6930	0.6001	0.5382	0.3262
1997	0.0676	0.1101	0.1386	0.0390

- : Impossible to estimate the coverage rate



(CPUE : $\circ < 0.5 \leq \bullet < 1.0 \leq \bullet < 1.5 \leq \bullet$)

Fig. 1. Distribution of CPUE (fish per 100 hooks) for Korean tuna longline fishery in the Pacific, 1996.

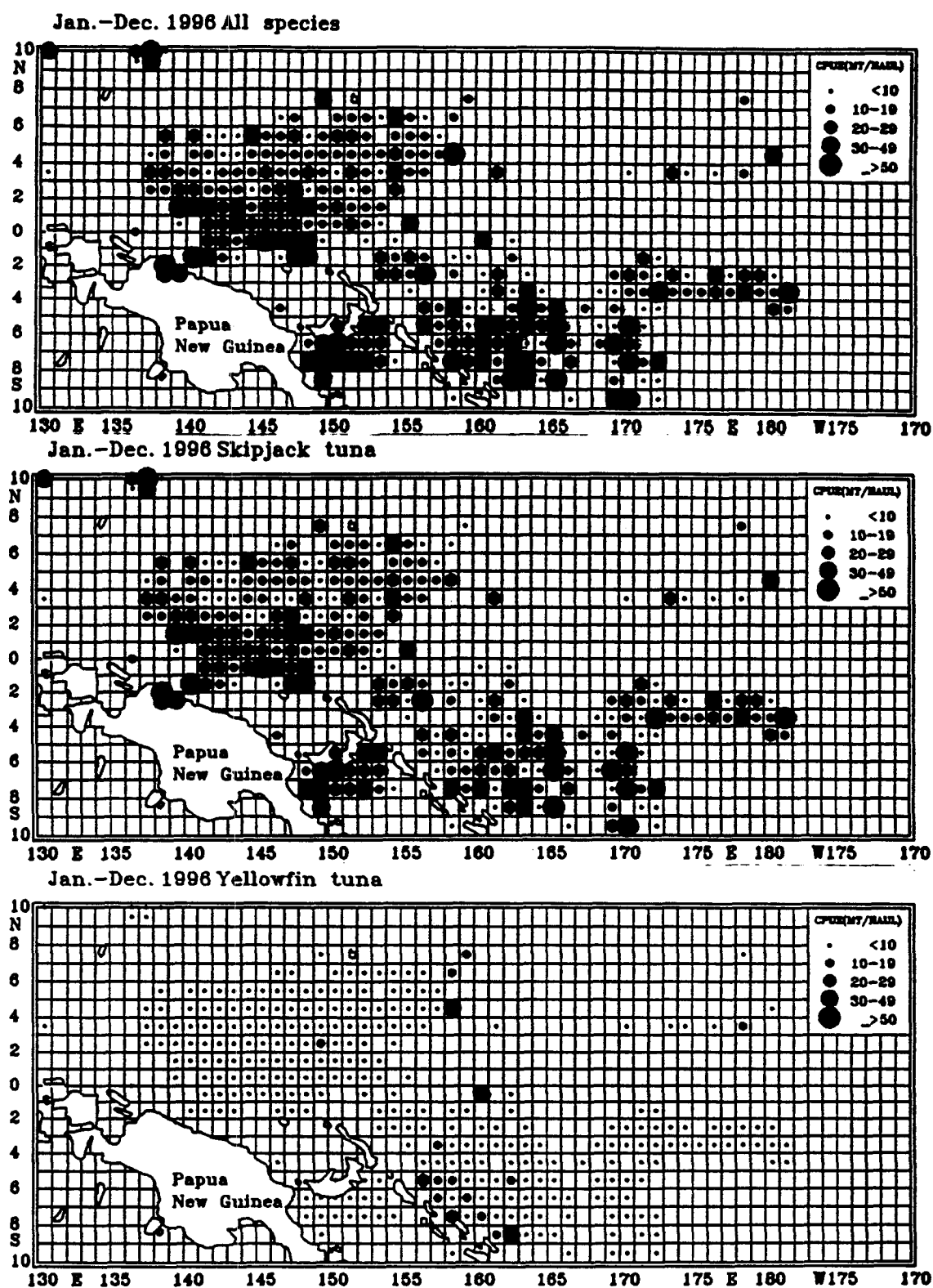


Fig. 2. Distribution of CPUE (mt/set) for Korean tuna purse seine fishery in the Pacific, 1996.

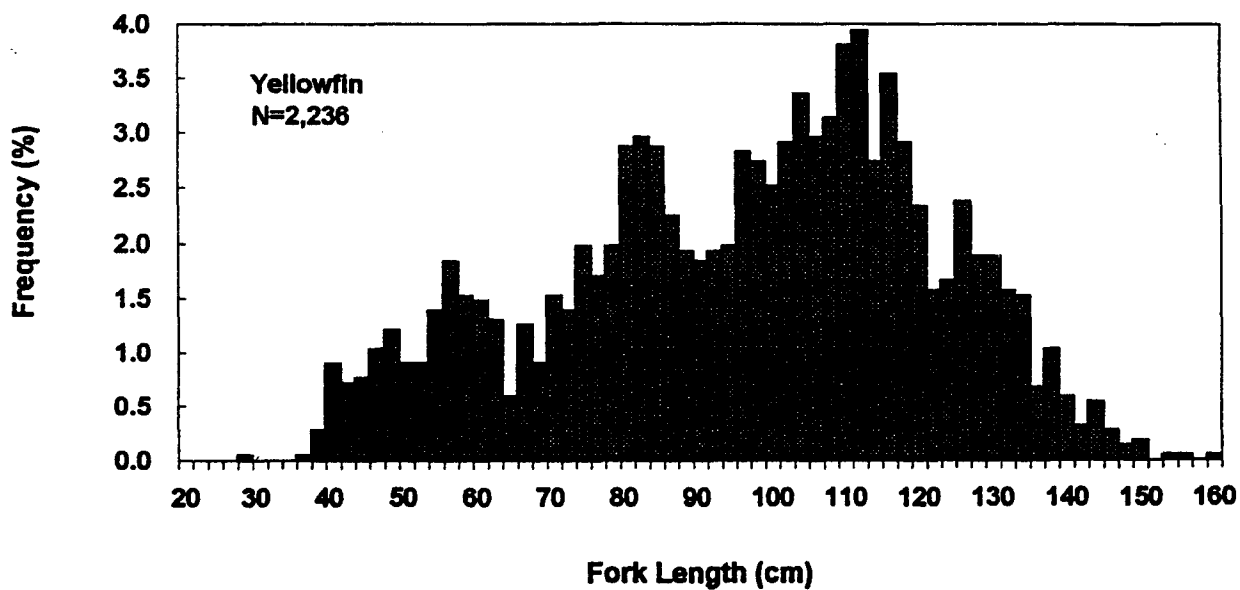
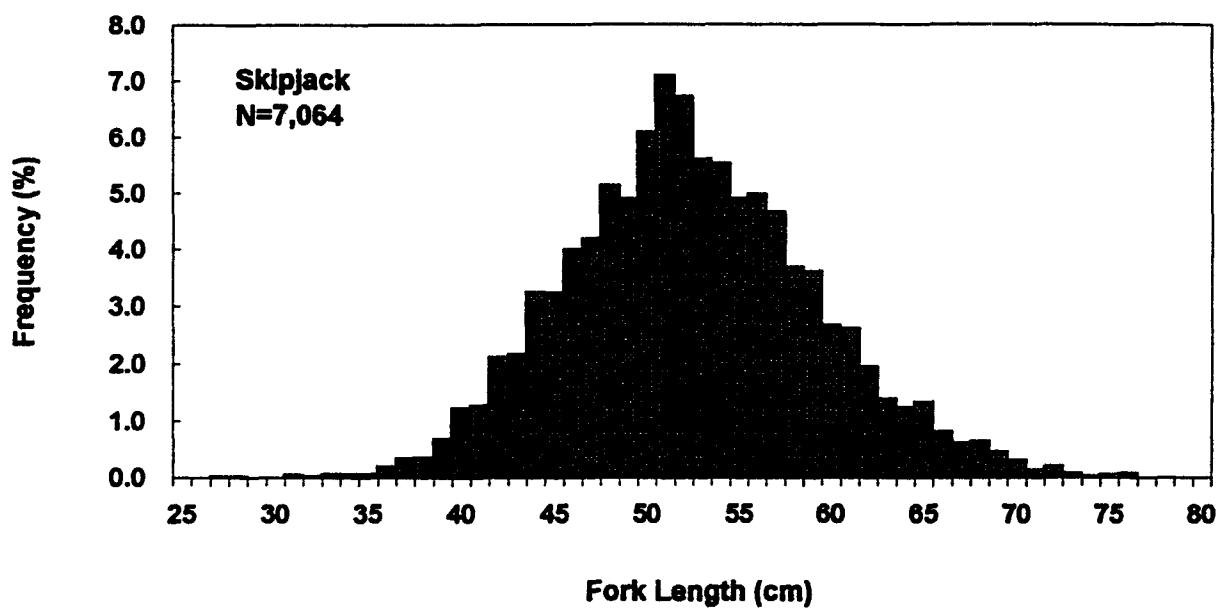


Fig. 3. Relative frequency distribution of skipjack (top) and yellowfin (bottom) caught by Korean tuna purse seiners in the Western Pacific Ocean, 1993-1997.