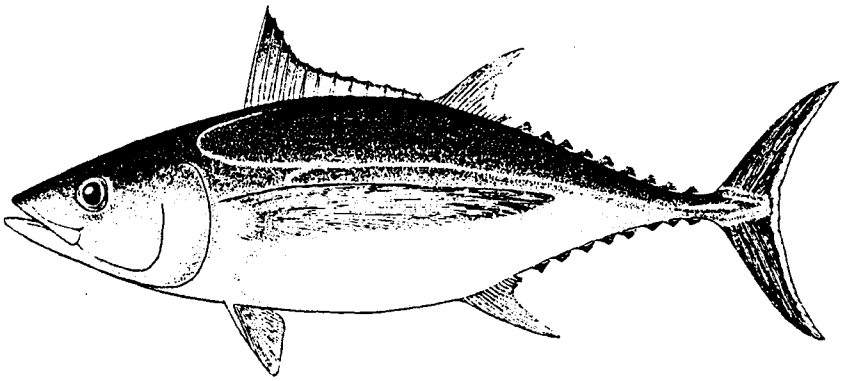
Longline, Troll and Driftnet Catch Rates of South Pacific Albacore

Oceanic Fisheries Programme
South Pacific Commission



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INTRODUCTION

Estimates of annual catches of South Pacific albacore by longline, troll and driftnet fleets are presented in Tables 1 and 2 and are illustrated in Figures 1 and 2. Estimates of annual catches for asian longline fleets in recent years are, in most cases, provisional.

Annual catch rates for South Pacific albacore are given in Tables 3, 4 and 5, and are illustrated in Figures 3a, 3b, 3c and 4. Catch rates were determined from data held in the SPAR Database (see Working Paper 1, SPAR 6).

The distribution of catches of South Pacific albacore by fishing fleet are illustrated in Figures 5–13. Catches for the most recent fishing period covered by data held in the SPAR Database are shown. Catches in numbers of fish, by calendar year for longliners and by season for troll vessels, are plotted by 5° square. A circle of 5° radius represents a catch of 80,000 fish or more for troll vessels, and 100,000 fish or more for longliners. The area of circles of less than 5° radius is proportional to the ratio of the catch in the 5° square to the catch represented by a circle of 5° radius.

The distribution of catch rates for the longline fisheries during 1993 and the US troll fishery during the 1994/95 season are illustrated in Figures 14 and 15, respectively; a circle of 5° radius represents a catch rate of 4 fish per 100 hooks for longliners, and 440 fish per day for troll vessels.

Table 1. Longline catches of South Pacific albacore

YEAR	AUSTRALIA	FIJI	FRENCH POLYNESIA	JAPAN	KOREA	NEW CALEDONIA	NEW ZEALAND	TAIWAN	TONGA	OTHER	TOTAL
1952				154							154
1953				803							803
1954				9,578							9,578
1955				8,625							8,625
1956				7,281							7,281
1957				8,757							8,757
1958				18,490	146						18,636
1959				17,385	456						17,841
1960				21,638	610						22,248
1961				23,412	330						23,742
1962				34,620	599						35,219
1963				29,120	1,367						30,487
1964				19,390	2,911						22,301
1965				17,793	6,405						24,198
1966				21,627	10,817						32,444
1967				15,104	13,717			11,723			40,544
1968				6,659	10,138			12,375			29,172
1969				4,894	9,963			9,557			24,414
1970			+	5,297	11,599			14,682			31,578
1971			+	3,472	14,482			15,880			33,834
1972			+	3,027	14,439			16,780			34,246
1973			+	2,550	17,452			17,742			37,744
1974			+	1,868	12,194			17,246			31,308
1975			+	1,333	9,015			16,939			27,287
1976			+	2,054	12,212			13,653			27,919
1977			+	2,328	13,176			21,452			36,956
1978			+	2,845	10,989			20,935			34,769
1979			+	2,274	8,682			14,952			25,908
1980			+	2,216	10,852			25,579			38,647
1981			+	4,203	14,793			14,367			33,363
1982			+	4,899	12,586			12,644	106		30,235
1983			+	5,723	6,669	12		12,106	143		24,653
1984			+	3,804	5,730	112		11,155	135		20,936
1985			+	3,868	14,267	131		9,601	174		28,041
1986	40		+	4,426	18,799	179		11,913	206		35,563
1987	164		+	4,490	8,646	563		15,009	252	...	29,124
1988	142		+	7,469	5,600	584		17,120	242	...	31,157
1989	600	5	100	5,365	3,997	566	19	10,867	195	...	21,714
1990	300	263	156	6,428	2,586	1,053	249	9,689	152	...	20,876
1991	195	416	146	4,401	1,225	909	325	15,186	174	...	22,977
1992	154	310	174	3,700	1,556	520	706	29,325	199	...	36,644
1993	185	463	714	6,240	557	755	539	20,628	232	17	30,330
1994	355	562	913	6,240	557	840	245	20,628	599	120	31,059

Provisional estimates are shaded; "+" denotes small catches of unknown size

SOURCES

Australia

Catches for 1986–1988 were derived by raising logbook data to take account of limited coverage prior to 1989. Australian catches includes an estimated 500 mt taken by Australia/Japan joint-venture vessels in 1989, 150 mt in 1990, 20 mt in 1991 and 5 mt in 1992 (Caton, SPAR 5). 1993 and 1994 estimates were taken from from the SPC Tuna Fishery Yearbook, 1994 (Lawson, 1995).

Fiji

Fisheries Division (Sharma). Catches for 1989-1992 have been raised to account for non-reporting from some vessels. Data for years prior to 1989 are available. Catch estimates for 1993 and 1994 were obtained from Lawson (1995).

Table 1 sources continued

French Polynesia	EVAAM (Yen and Stein). Catch estimates for 1993 and 1994 were obtained from Lawson (1995).
Japan	NRIFSF, Fisheries Agency of Japan (Uozumi). The provisional catch estimate for 1993 was determined from aggregated data provided to SPC by Fisheries Agency of Japan. The provisional catch estimate for 1994 was carried over from 1993.
Korea	NFRDA (Uk Lee). Estimates for 1958–1987 were taken from the report of SPAR 2; these estimates include some catch from the North Pacific. Catch estimates for 1988–1991 for the entire Pacific Ocean were provided by NFRDA (Uk Lee). These were adjusted to reflect the proportion of albacore catch taken annually in the South Pacific for 1984–1987. The provisional catch estimates for 1992 and 1993 were determined from aggregated data (unraised) provided by NFRDA for the SPAR area; the estimate for 1993 has been carried over for 1994.
New Caledonia	Marine Marchande (Etaix-Bonnin). Catch estimates prior to 1987 were determined from logbook data held at SPC.
New Zealand	Catch estimates for 1989–1992 provided by Ministry of Agriculture and Fisheries at SPAR 5 (Murray, 1993). Catch estimates for 1993–1994 obtained from Lawson (1995).
Taiwan	National Taiwan University. Wang (pers. comm. Apr 19, 1993, July 27, 1993) provided estimates for 1967-1991. Catch estimates for 1992 and 1993 were obtained from aggregated data provided by the National Taiwan University (Hsu) for the SPAR area. The catch estimate for 1994 has been carried over from 1993.
Tonga	Ministry of Fisheries (Latu). Albacore catch estimates were derived by applying the species composition determined from daily logsheet data held in the SPC Regional Tuna Fisheries Database to estimates of the total annual catch for all species combined provided by the Ministry of Fisheries. Catch estimates for 1990-1992 obtained from the daily logsheet, provided by the Ministry of Fisheries. Catch estimates during 1993-1994 were obtained from Lawson (1995).
Other	Catches estimates of other fleets that have not been described in this table. For 1993 these include vessels from Western Samoa (17 mt), and for 1994, the Cook Islands (New Zealand) (25 mt), Western Samoa (17 mt) and the United States (78 mt) (Lawson, 1995).

Table 2. Surface fishery catches (mt) of South Pacific albacore

YEAR	AUSTRALIA	CHILE	FR POL. TROLL	JAPAN P/L	JAPAN DRIFTNET	KOREA DRIFTNET	TAIWAN DRIFTNET	NZ TROLL	USA TROLL	OTHER TROLL	TOTAL
1960				45							45
1961											0
1962											0
1963				16							16
1964											0
1965											0
1966											0
1967											0
1968											0
1969											0
1970	100										100
1971	100										100
1972	100										100
1973	100										100
1974	100							898			998
1975	100							646			746
1976	100							25			125
1977	100							621			721
1978	100							1,686			1,786
1979	100							814			914
1980	100			19				1,468			1,587
1981	50			8				2,085			2,143
1982	50			1				2,434			2,485
1983	50			2	32			744			828
1984	50				1,581			2,773			4,404
1985	50				1,928			3,253			5,231
1986	50				1,936			1,911	89		3,986
1987	50				919			1,227	859		3,055
1988	50				4,271		1,000	330	3,339	170	9,160
1989	50		90		13,263	172	8,520	5,161	3,563	192	31,011
1990	50	...	359		5,667	0	1,859	2,525	3,758	30	14,248
1991	50	...	326		0	0	821	2,464	5,494	133	9,288
1992	100	...	72	49	0	0	0	3,856	3,016	133	7,226
1993	44	...	45	0	0	0	0	3,856	1,028	...	4,973
1994	50	...	...	0	0	0	0	4,400	575	...	5,025

Provisional estimates are shaded

SOURCES

Australia	Bureau of Resource Sciences (Caton). Incidental catches of albacore in the Southern bluefin pole-and-line fishery declined after 1980. Recreational fishery catches from 1982 are estimated to be about 50 mt. Catches during 1992 include 55 mt taken by commercial trollers. Catch estimates for 1993 and 1994 taken from logbook data (unraised), provided by AFMA.
Chile	The FAO Yearbook, Fishery Statistics, Vol. 76 (1993) does not provide a breakdown for albacore catch, although lists the following catches for 'tuna-like fishes' : 27 mt for 1988, 102 mt for 1989, 308 mt for 1990, 210 mt for 1991, 32 mt for 1992 and 134 mt for 1993.
French Polynesia	EVAAM (Yen) provided catch estimates for years including and subsequent to the 1990/91 season. US - National Marine Fisheries Service (Sakagawa) provided estimates for season 1989/90.
Japan	National Research Institute of Far Seas Fisheries (Uozumi).

Table 2 sources continued

Korea	National Fisheries Administration (Kim). The estimate presented for the 1989 calendar year represents the catch during the 1988/89 season, during which one vessel was active.
Other	U.S. - National Marine Fisheries Service (Sakagawa). "Other Troll" includes catches by Canadian and Fijian trollers. The estimate for 1991 has been used as the provisional estimate for 1992. Includes estimate of 30 mt each year since 1988 for the artisanal fishery in the Easter Islands. SPC (Labelle).
Taiwan	National Taiwan University (Hsu). Catch estimates are for the fishing season, e.g., the estimate presented for the 1988 calendar year represents the catch during the 1987/88 season. The catch estimate for the 1987/88 season was estimated by the OFP and reported to SPAR 3. The estimate for 1988/89 was determined from catch and effort data processed by the National Taiwan University (Hsu). Estimates for the 1989/90 and 1990/91 seasons were reported to SPAR 4 by the National Taiwan University (Wang).
New Zealand	Ministry of Agriculture and Fisheries (Murray). Catch estimates are for the fishing season, e.g., the estimate for the 1974 calendar year is the catch during the 1973/74 season. The figure for 1991/92 season includes a provisional estimate of 700 mt albacore catch in the STCZ. Catch estimate for 1994 provided by MAF (Jones). Catch estimate for 1993 carried over from 1992.
United States	National Marine Fisheries Service (Sakagawa and Coan). Catch estimate for 1994 taken from NMFS Tuna Newsletter, Issue 114, August 1994, Southwest Fisheries Science Center, National Marine Fisheries Service, La Jolla, California.

Table 3. Longline catch rates for South Pacific albacore

YEAR	AUSTRALIA	FIJI	JAPAN	KOREA	NEW CALEDONIA	TAIWAN	TONGA
1962			2.373				
1963			1.582				
1964			1.367				
1965			1.400				
1966			1.396				
1967			1.459			4.652	
1968			0.771			4.029	
1969			0.435			3.726	
1970			0.574			4.407	
1971			0.384			3.443	
1972			0.257			3.380	
1973			0.231			3.046	
1974			0.197			2.632	
1975			0.118	0.229		2.901	
1976			0.127	0.883		3.041	
1977			0.139	0.906		3.638	
1978			0.166	1.752		3.809	
1979			0.145	1.043		2.836	
1980			0.110	0.753		2.934	
1981			0.202	0.993		2.324	
1982			0.232	1.200		2.644	0.873
1983			0.281	1.168	0.719	3.201	1.440
1984			0.217	0.838	1.902	2.314	1.487
1985			0.223	0.891	1.121	2.992	1.877
1986			0.209	0.979	1.383	4.055	3.755
1987	0.635		0.179	0.439	1.600	3.015	3.358
1988	0.664		0.265	0.458	2.616	2.852	3.067
1989	1.127	0.559	0.252	0.196	1.830	1.752	2.097
1990	0.902	0.815	0.255	0.109	1.961	1.630	2.060
1991	1.028	0.949	0.195	0.151	1.734	1.882	2.654
1992	0.984	0.755	0.230	0.299	1.798	2.933	2.460
1993	0.377	0.868	0.409	0.139	2.825	2.830	1.924
1994	1.174	0.904	0.229		1.712		

Units : number of fish per 100 hooks

Table 4. Longline catch rates for South Pacific albacore by area

	North of 10 °S			10°S - 30°S			South of 30°S		
YEAR	JAPAN	KOREA	TAIWAN	JAPAN	KOREA	TAIWAN	JAPAN	KOREA	TAIWAN
1962	1.012			3.579			0.950		
1963	0.492			2.636			1.367		
1964	0.557			2.267			1.125		
1965	0.526			2.442			1.024		
1966	0.399			2.358			1.205		
1967	0.230		3.673	2.222		5.012	1.646		9.399
1968	0.123		3.439	1.374		4.455	0.932		9.873
1969	0.045		3.226	0.954		3.784	0.518		14.353
1970	0.048		3.960	1.139		4.520	0.579		11.271
1971	0.041		1.916	0.773		3.884	0.436		7.678
1972	0.032		2.019	0.392		3.751	0.381		8.065
1973	0.023		1.727	0.253		3.067	0.533		5.714
1974	0.017		1.132	0.201		2.125	0.358		4.484
1975	0.015	0.135	1.075	0.127	0.639	2.614	0.271	2.570	4.994
1976	0.017	0.218	1.124	0.228	1.629	3.130	0.170	1.157	4.860
1977	0.031	0.382	1.795	0.327	1.555	3.428	0.144	1.689	6.835
1978	0.028	0.811	1.360	0.298	2.804	3.474	0.286	4.681	6.723
1979	0.044	0.326	1.402	0.230	1.695	2.650	0.260	4.056	4.977
1980	0.044	0.363	1.405	0.220	1.445	2.814	0.144	3.080	4.922
1981	0.059	0.377	1.204	0.374	1.201	1.969	0.261	3.149	4.093
1982	0.076	0.552	1.666	0.346	1.337	2.352	0.449	3.938	4.116
1983	0.046	0.494	1.310	0.352	1.819	2.810	0.593	3.213	4.903
1984	0.034	0.217	0.928	0.345	1.544	1.917	0.442	3.023	3.985
1985	0.045	0.185	1.462	0.354	1.441	2.463	0.612	3.783	5.158
1986	0.025	0.294	1.942	0.272	1.321	3.123	0.673	4.745	8.758
1987	0.016	0.272	1.420	0.249	0.851	2.822	0.550	4.665	4.121
1988	0.040	0.299	0.998	0.409	1.099	2.541	0.550	2.796	4.313
1989	0.016	0.066	0.385	0.373	1.183	1.564	0.660	1.398	2.783
1990	0.007	0.088	0.712	0.402	0.284	1.785	0.752		1.843
1991	0.013	0.106	0.801	0.346	0.271	1.708	0.564		3.186
1992	0.018	0.271		0.390	0.400	2.214	0.758		3.390
1993	0.033	0.108	0.050	0.685	0.260	2.382	1.135	0.159	3.495

Units : number of fish per 100 hooks

Table 5. Surface fishery catch rates for South Pacific albacore

	JAPAN	TAIWAN	AU	NZ	USA
SEASON	DRIFTNET	DRIFTNET	TROLL	TROLL	TROLL
1986/87				...	339
1987/88				...	238
1988/89	621	99	7	...	236
1989/90	697	...	...	...	262
1990/91		...	21	...	195
1991/92			33	147	133
1992/93			10	...	74
1993/94			22	...	136
1994/95			4	...	292

Units: fish per day

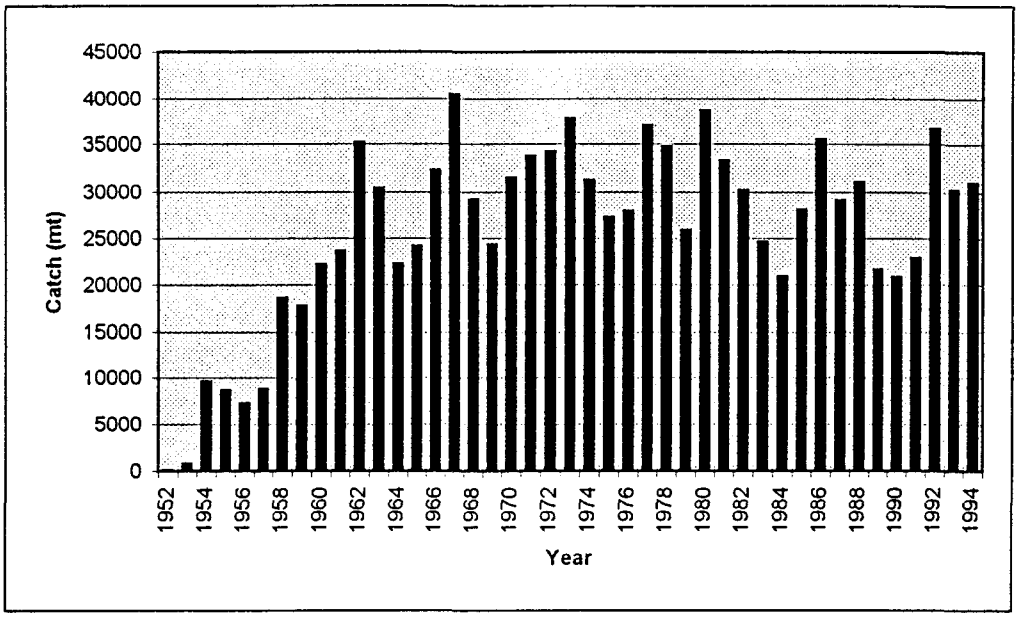

Figure 1. Longline catches of South Pacific albacore

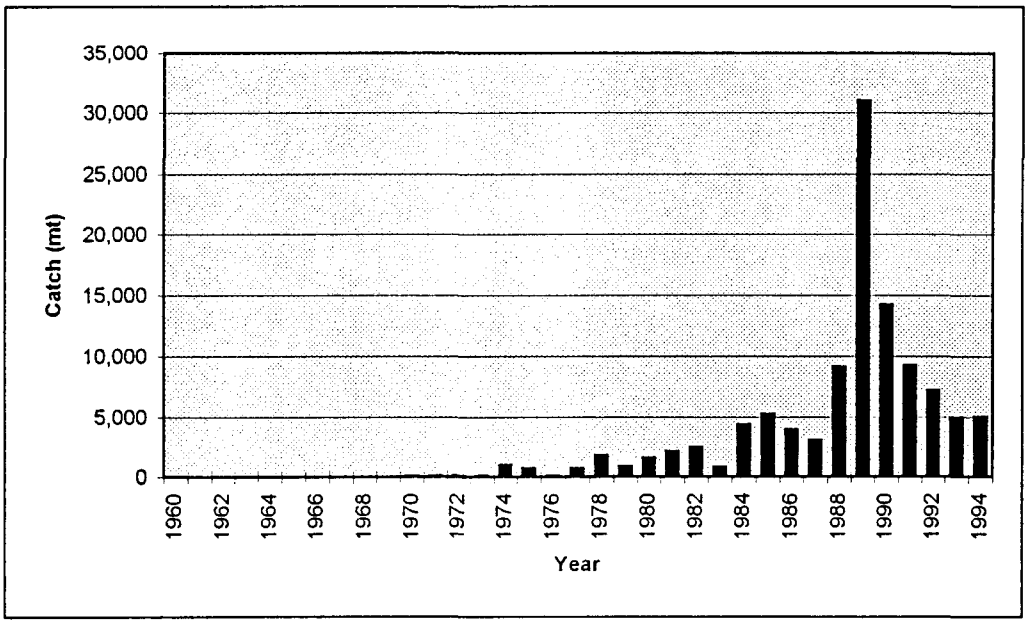

Figure 2. Surface fishery catches of South Pacific albacore

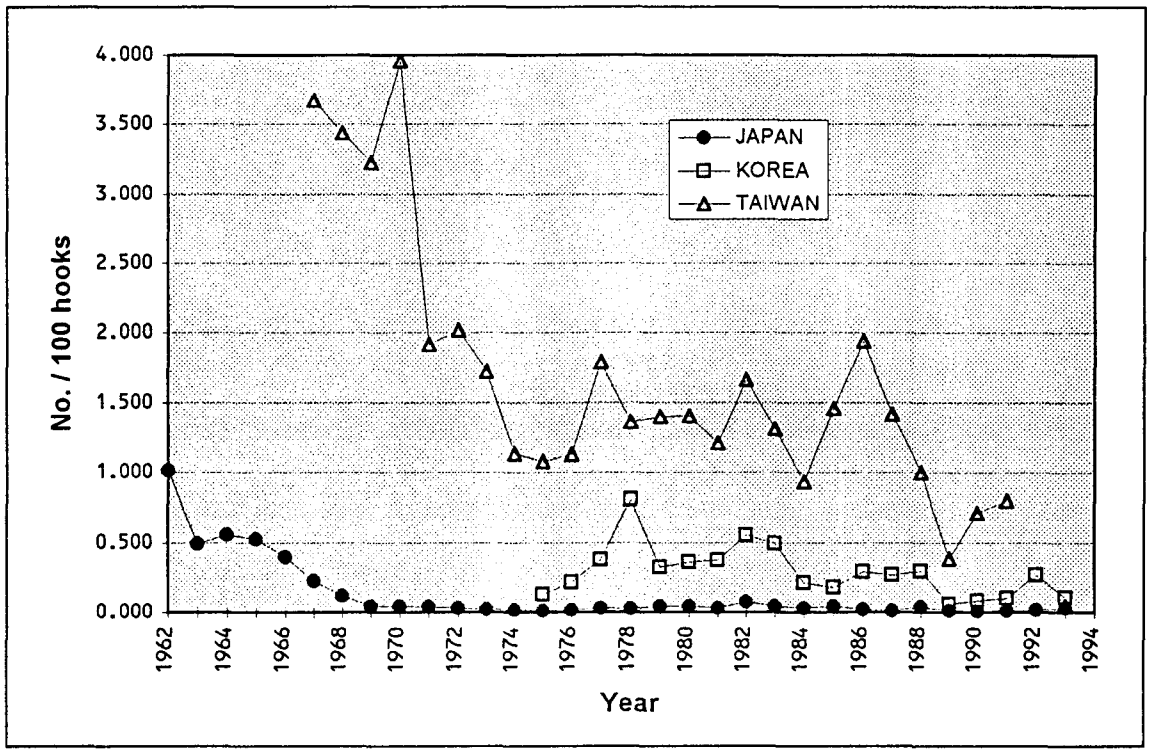

Figure 3a. Longline catch rates for South Pacific albacore, north of 10°S

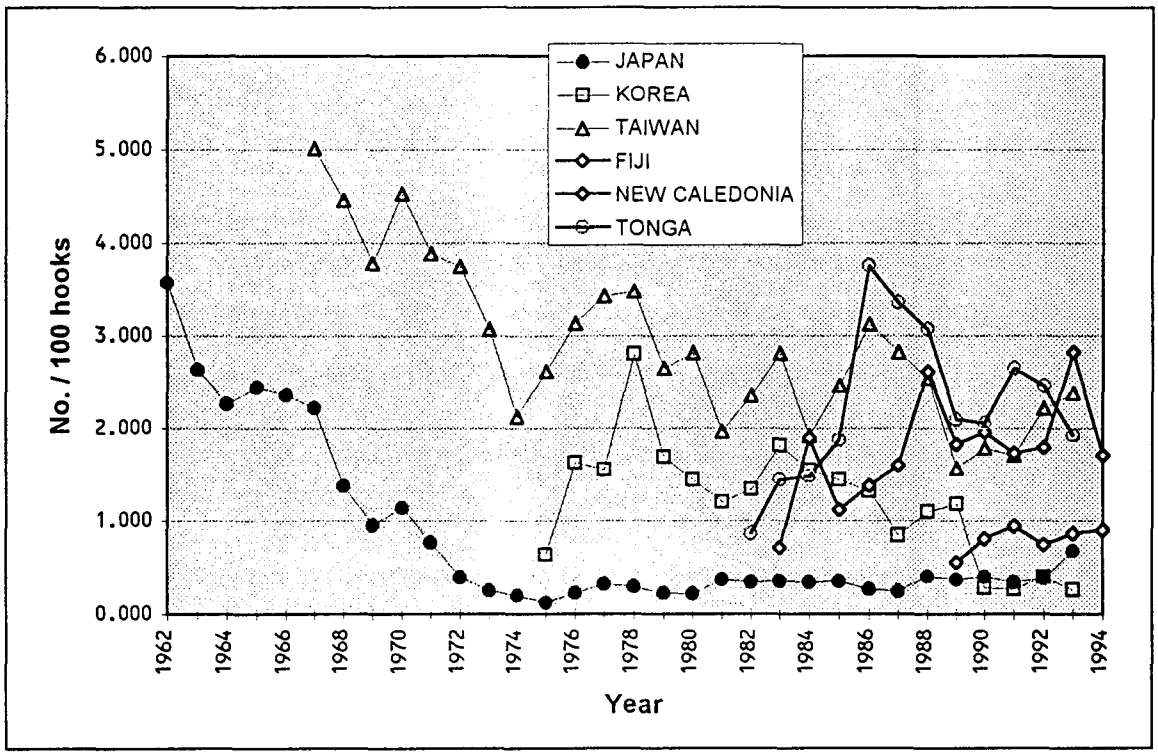

Figure 3b. Longline catch rates for South Pacific albacore, between 10°S and 30°S

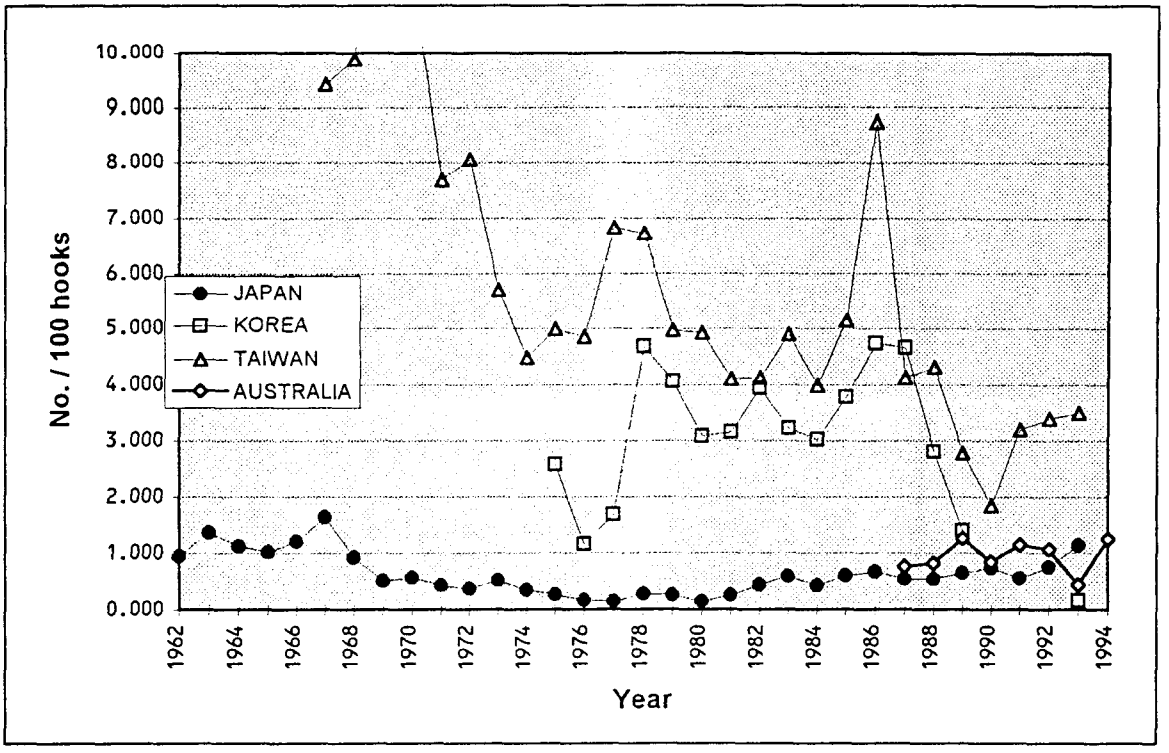

Figure 3c. Longline catch rates for South Pacific albacore, south of 30°S

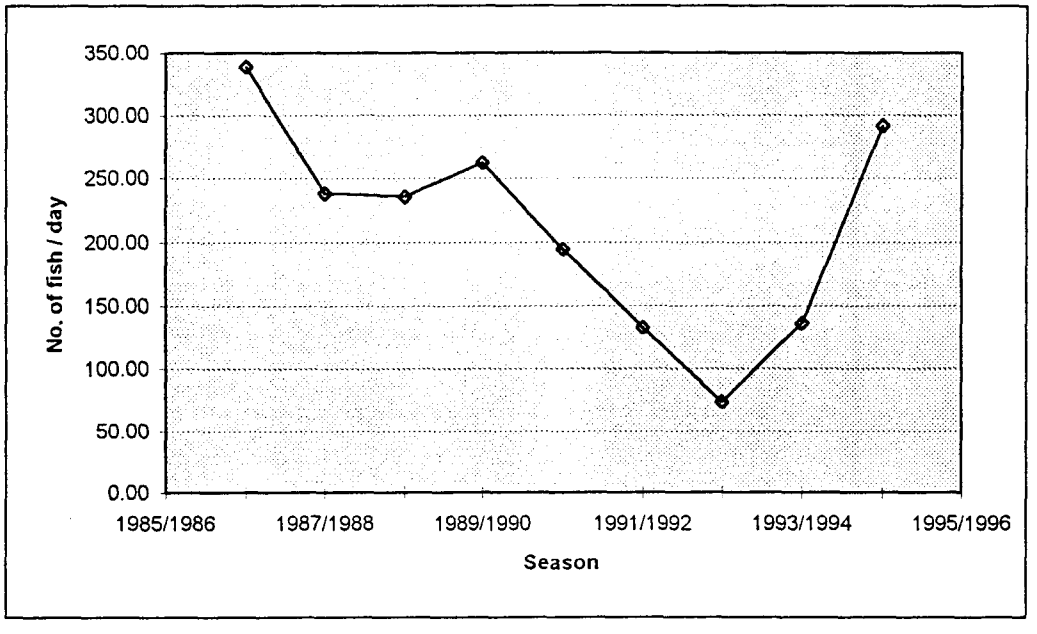

Figure 4. US troll fishery catch rates for South Pacific albacore

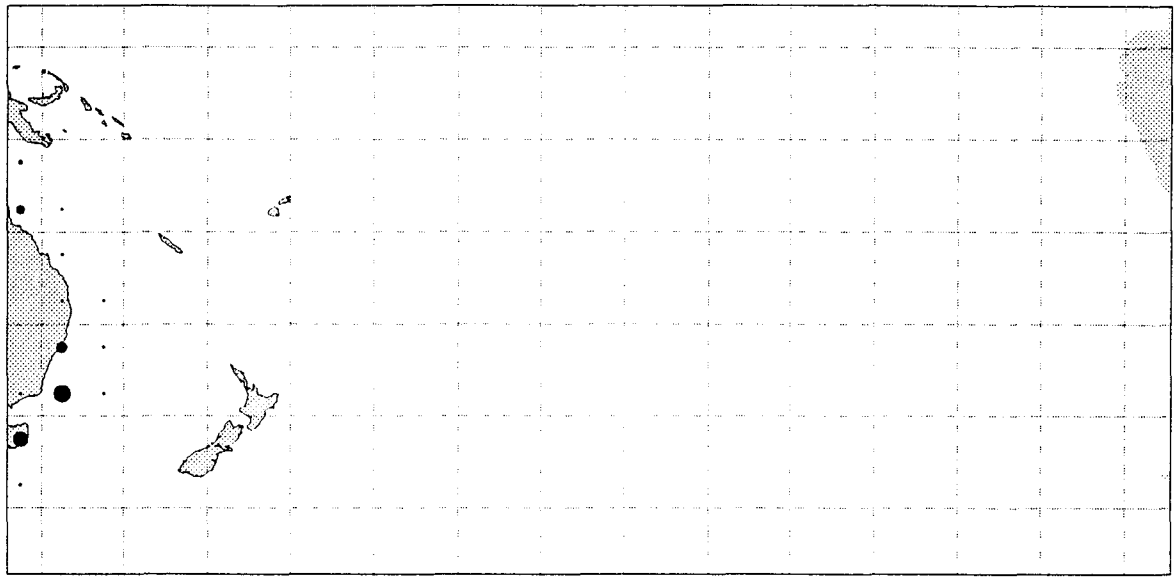

Figure 5. Albacore catch by Australian longliners during 1994

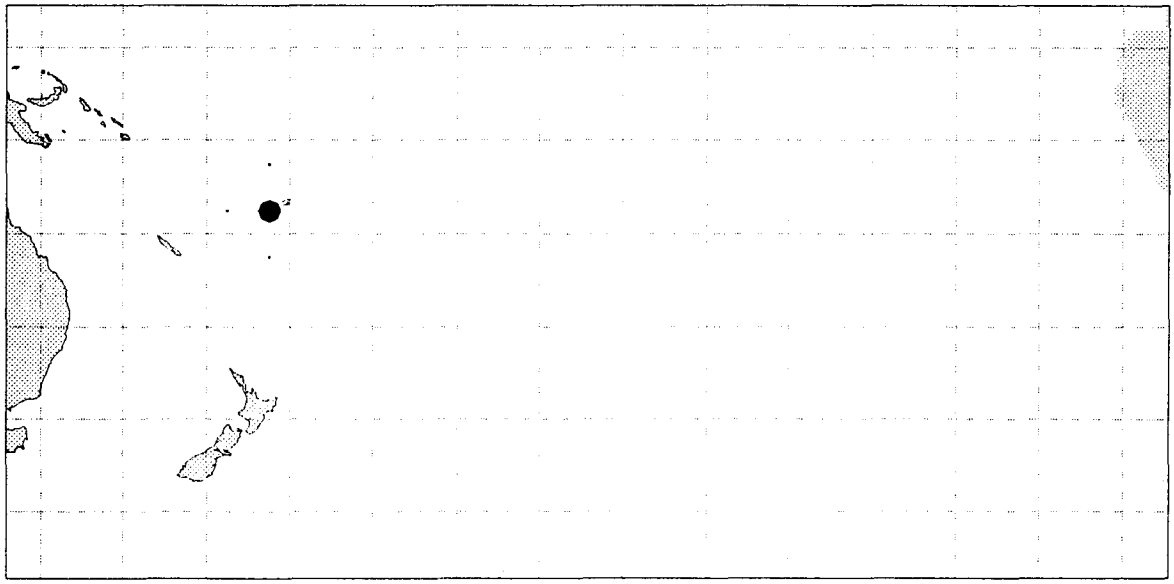

Figure 6. Albacore catch by Fijian longliners during 1994

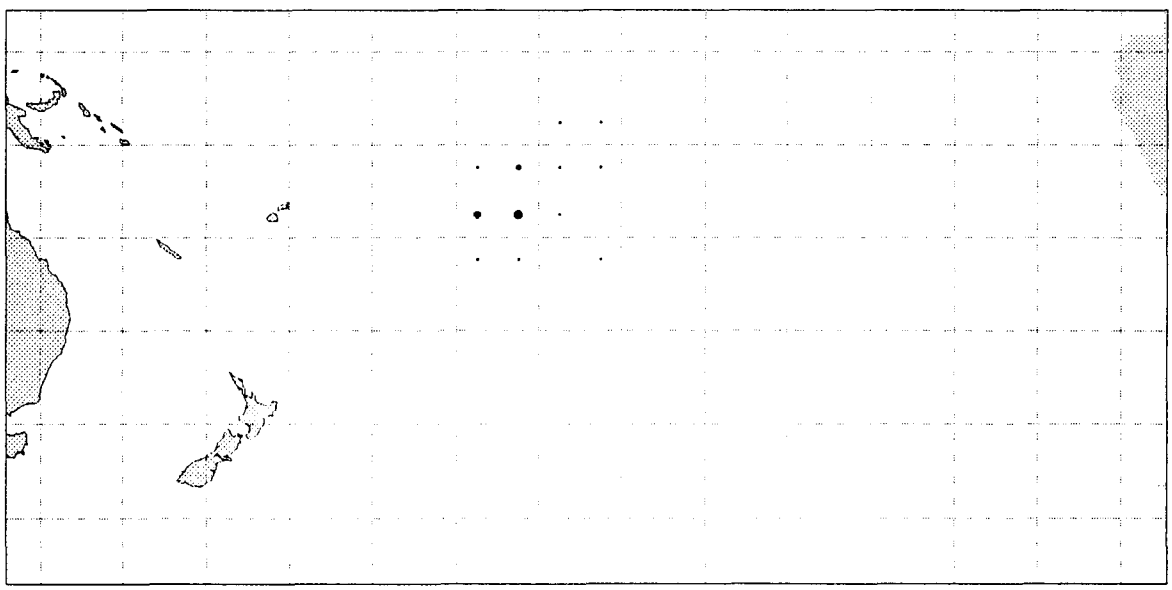

Figure 7. Albacore catch by French Polynesian longliners during 1994

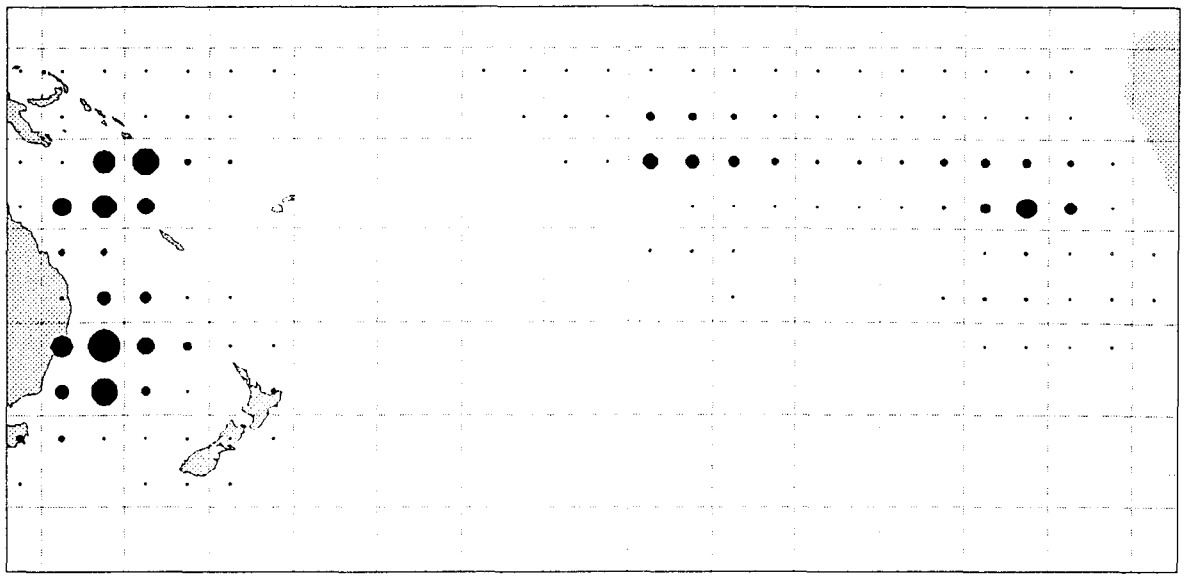

Figure 8. Albacore catch by Japanese longliners during 1993

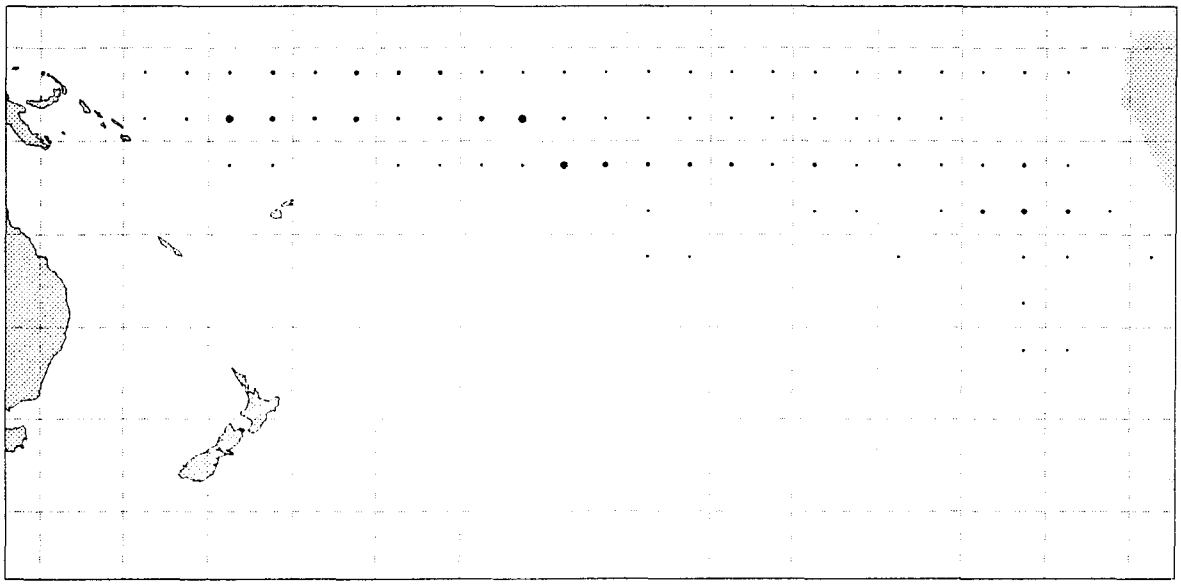

Figure 9. Albacore catch by Korean longliners during 1993

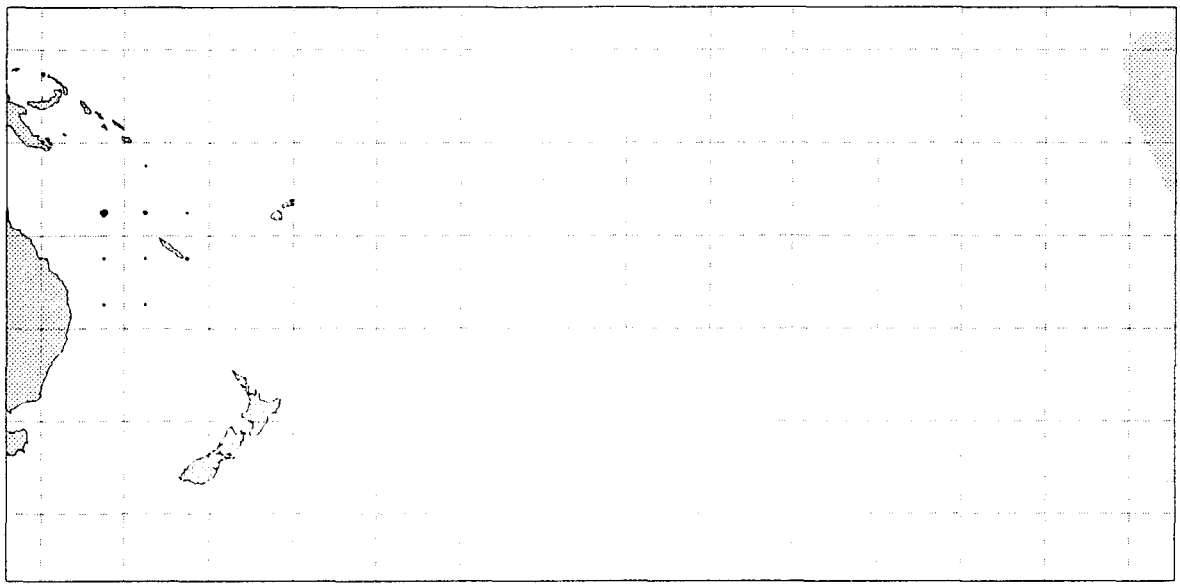

Figure 10. Albacore catch by New Caledonian longliners during 1994

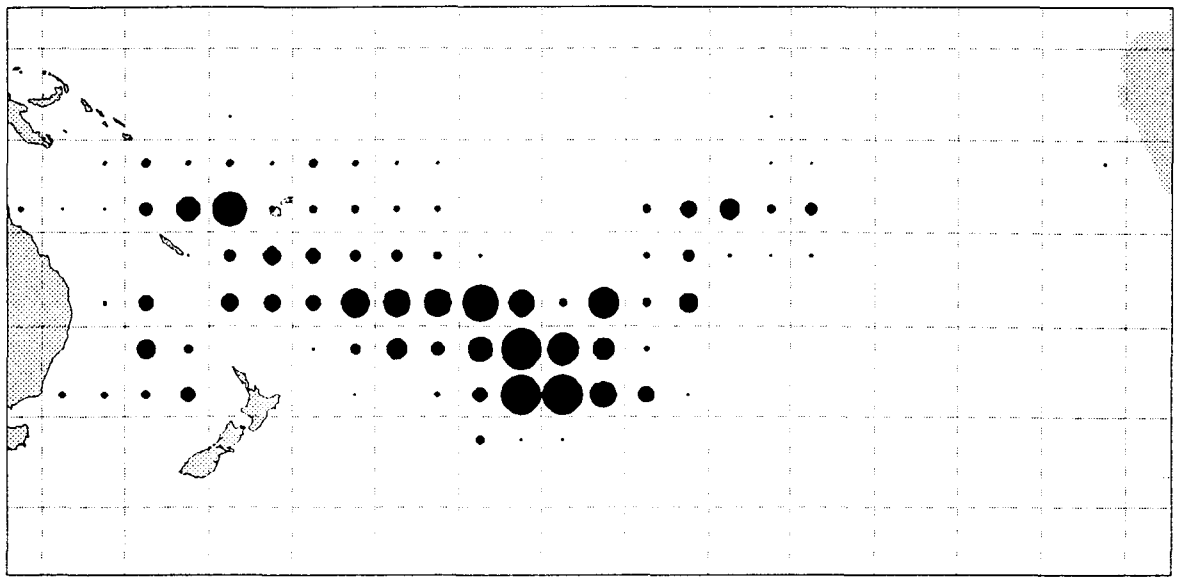

Figure 11. Albacore catch by Taiwanese longliners during 1993

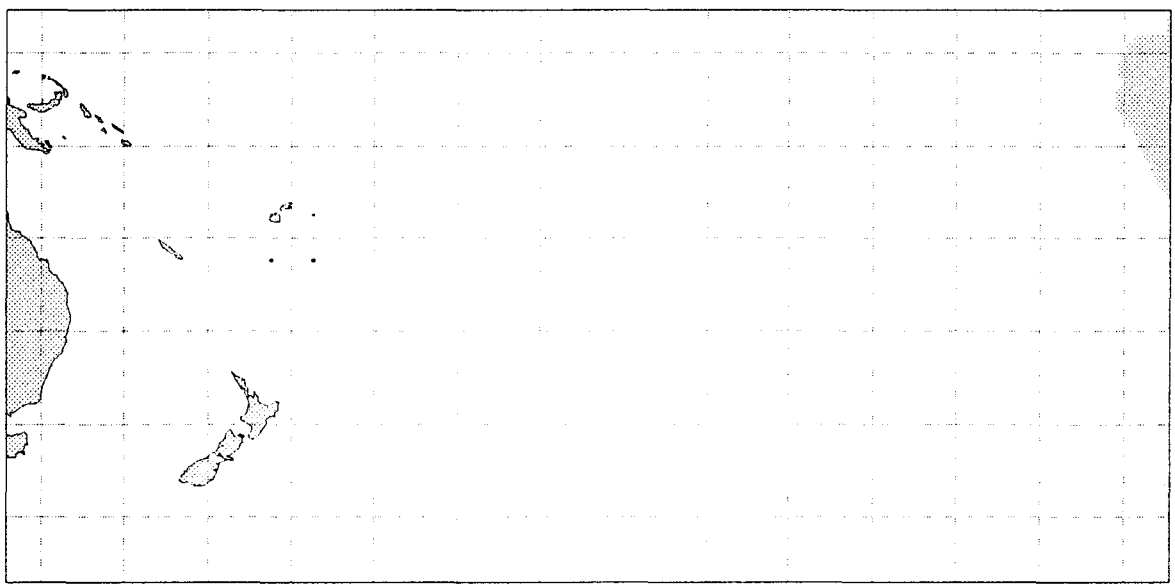

Figure 12. Albacore catch by Tongan longliners during 1993

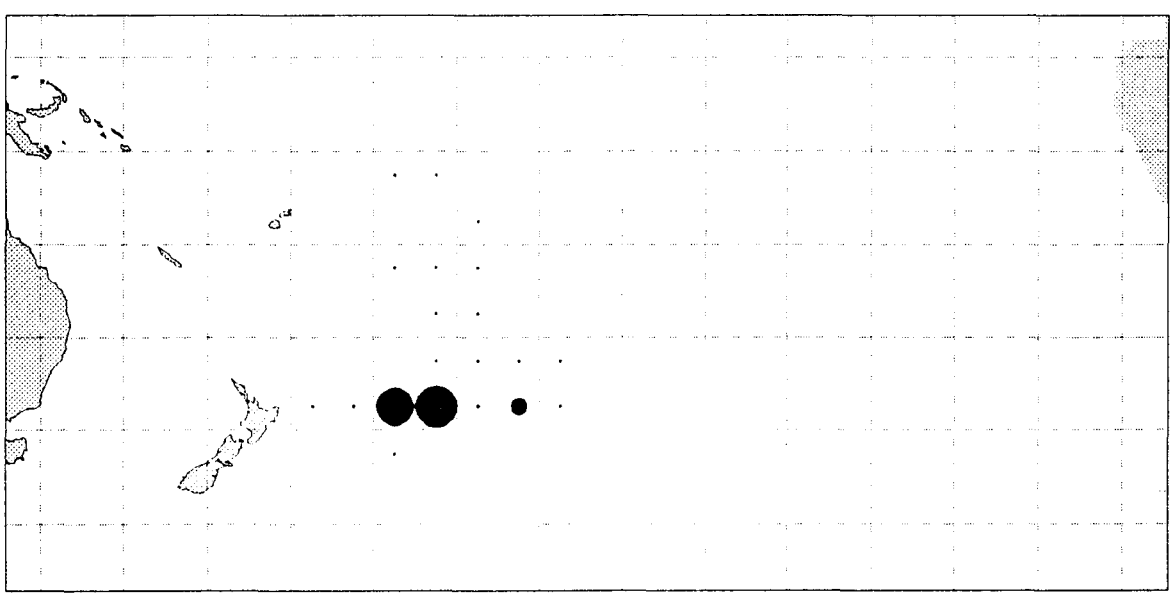

Figure 13. Albacore catch by US trollers during the 1994/95 season

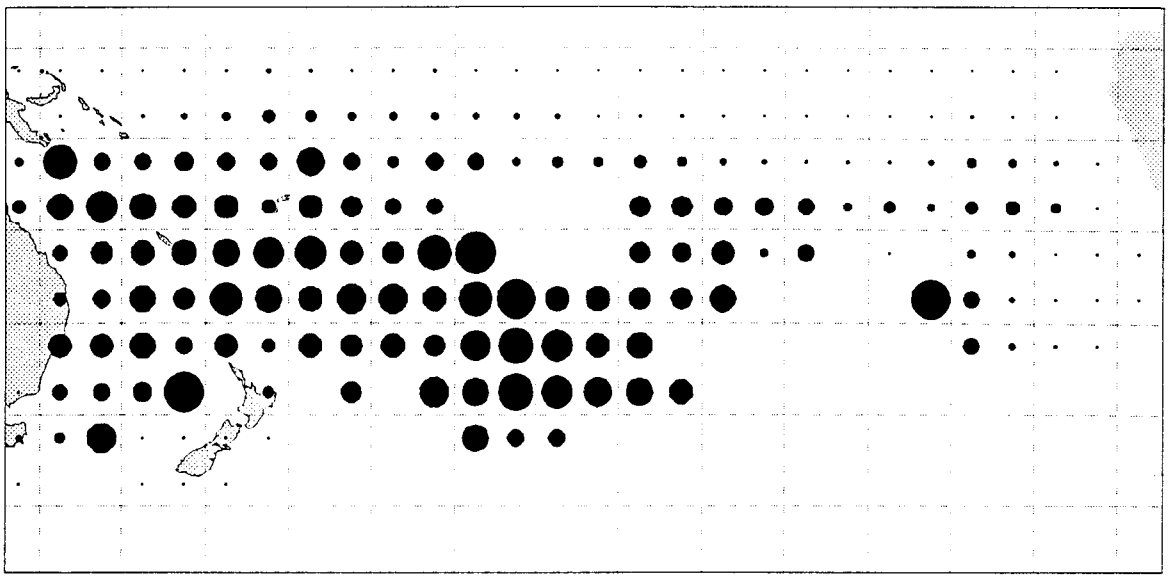

Figure 14. Distribution of longline catch rates (no./100 hooks) for South Pacific albacore during 1993

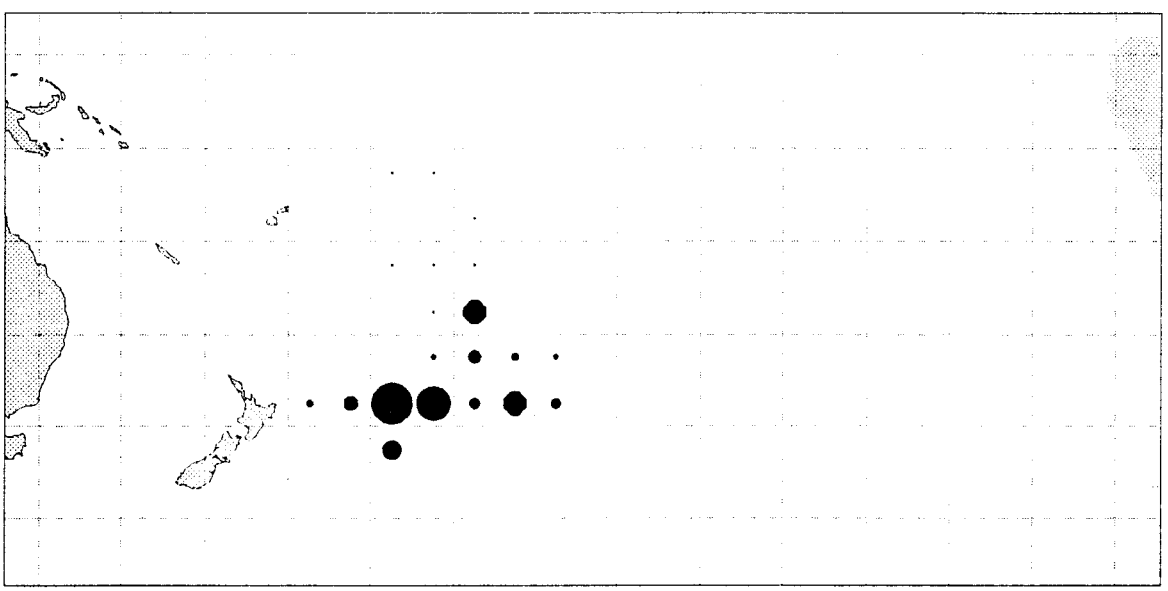

Figure 15. Distribution of US troll catch rates (no./day) for South Pacific albacore during the 1994/95 season