

OVERALL FISHING INTENSITY AND YIELD BY THE ATLANTIC LONGLINE FISHERY FOR ALBACORE, 1967-1982

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SUMMARY

This report is to update a previous report (Sun and Yang, 1983) on the catch and fishing intensity of Atlantic albacore caught by the longline fishery up to 1982. The results indicate that the catch, CPUE and fishing intensity of the entire North Atlantic longline fishery in 1982 increased moderately compared with the previous year. Both the catch and the CPUE of the south Atlantic longline fisheries in 1982 were larger than those of 1981, while the fishing intensity in 1982 decreased slightly compared with the previous year.

RESUME

Le présent rapport est une mise à jour d'un rapport antérieur (Sun et Yang 1983) portant sur la prise et l'intensité de pêche du germon de l'Atlantique pris par la pêcherie palangrière jusqu'en 1982. Les résultats indiquent que la prise, la CPUE et l'intensité de pêche de la pêcherie palangrière dans tout l'Atlantique nord en 1982 a augmenté d'une façon modérée par rapport à l'année précédente. La prise et la CPUE de la pêcherie palangrière de l'Atlantique sud en 1982 ont toutes deux dépassé celles de 1981, alors que l'intensité de pêche de 1982 a légèrement baissé par rapport à l'année antérieure.

RESUMEN

Se actualiza un informe anterior (Sun & Yang 1983) sobre la captura y la intensidad de pesca sobre el atún blanco, de la flota de palangre en el Atlántico, hasta 1982. Los resultados indican que la captura, la CPUE y la intensidad de pesca de toda la pesquería palangrera en el Atlántico Norte en 1982, aumentaron de forma moderada en comparación con el año anterior. Tanto la captura como la CPUE de las pesquerías palangreras del Atlántico Sur en 1982 eran superiores a las de 1981, mientras que la intensidad de pesca en 1982 descendió ligeramente en relación con el año anterior.

This report is to update a previous report (Sun and Yang 1983) on the catch and fishing intensity of Atlantic albacore caught by the longline fishery up to 1982.

Data and Processing:

The data utilized in this report consists of yield statistics (ICCAT, 1976, 1981, 1982, 1983) and monthly unit area ($5^{\circ} \times 5^{\circ}$) catch statistics (Taiwan Fisheries Bureau, 1968-1970, Institute of Oceanography, National Taiwan University, 1971-1983, Fisheries Agency of Japan, 1969-1982). The average year and procedures, which estimate the total fishing intensity and total catch in numbers of albacore for the all north and south Atlantic longline fleets, are the same as those described in detail in the previous report (Sun and Yang 1983) except for the following in 1982: Japanese 1982 catch and effort data has not yet been published, so we were unable to use it. Therefore, the overall fishing intensity by the north Atlantic longline fisheries was only obtainable by multiplying the Taiwanese north Atlantic longline fishing intensity by the quotient of the total North Atlantic longline yield over the Taiwanese North Atlantic longline yield. This procedure was similarly done for the South Atlantic Ocean. The total albacore catch (numbers) in the north and south Atlantic Ocean were also estimated following the same procedure.

Results:

Northern stock:

The total north Atlantic albacore yield by longline fleets in 1982 was 14,100MT (Table 1, Fig. 1), about 44% (4,312MT) larger than that of 1981. Catch by country

indicates that Taiwan, Japan and Korea were the main albacore longline fishing countries: the Taiwanese fleet harvested 10,500MT (74.5%); the Japanese, 1,700MT (12.1%); and the Korean, 1,326MT (9.4%).

The estimated overall fishing intensity in 1982 was 1,000,200 hooks (effective effort/ 5° square) for the total northern stock, which was a slight 3.2% increase from 1981. CPUE (expressed in numbers per 100 effective hooks) also increased from 0.805 to 1.04 in 1981. The relationship of yield to fishing intensity for the whole northern stock (Fig. 2) indicates that there is an increasing trend in yield associated with the increasing fishing intensity of earlier years, 1968-1971. The yield reached its maximum of 23,021MT in 1976 when the fishing intensity was 1,653,500 hooks (effective effort / 5° square). The annual yield decreased rapidly with decreasing fishing intensity from 1977 to 1980. However, the annual yield has increased again since 1981 with increasing fishing intensity.

Southern stock:

The total albacore yield by longline fleets in the south Atlantic Ocean in 1982 was 25,000MT (Table 2, Fig. 3), about 22.9% (4,665MT) larger than that of 1981. The south Atlantic albacore stock has been exploited predominantly by longline gear. More than 89% of the total catch since 1978 has been caught by the Taiwanese fleet. The estimated overall fishing intensity in 1982 for the total southern stock was 1,201,800 hooks (effective effort/ 5° square). This is a 4.6% decrease compared to 1981. The CPUE increased slightly from 1.25 in 1981 to 1.36 in 1982. The relationship of yield to fishing intensity for the entire southern stock (Fig. 4) indicates that the annual yield fluctuated between 17,400 to 21,800MT whereas the fishing intensity was fairly stable, between 888,600 and 967,700 hooks (effective effort / 5° square) from 1974-1980, except in 1978. The fishing

intensity from 1981 to 1982 dropped slightly from 1,260,000 to 1,201,800 hooks (effective effort / 5° square), while the yield increased from 20,335 to 25,000MT.

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Table 1. Hook rate, catch in number, yield in weight and overall fishing intensity of albacore in Taiwanese, Japanese and in the whole longline fishery in the North Atlantic Ocean, 1967-1982.

Year	Taiwanese Longline Fishery				Japanese Longline Fishery				Whole Longline Fishery			
	Hook Rate (K)	Catch in 1000 fishes	Yield in Tons	Intensity in 1000 hooks/5°sq.	Hook Rate (K)	Catch in 1000 fishes	Yield in Tons	Intensity in 1000 hooks/5°sq.	Catch in 1000 fishes	Yield in Tons	Intensity in 1000 hooks/5°sq.	
1967	2.07	18	180	11.1	1.75	231	4,771	186.2	301	5,491	221.5	
1968	2.16	137	1,099	81.0	1.87	177	3,306	137.7	321	4,505	223.6	
1969	1.80	134	1,498	100.5	1.47	146	4,717	186.8	354	7,815	285.7	
1970	1.12	217	4,675	253.9	1.50	357	3,875	214.6	874	16,061	865.3	
1971	1.12	171	2,871	203.0	1.07	333	6,472	415.4	963	17,890	1,181.4	
1972	1.12	277	4,410	341.8	0.72	63	1,320	118.2	872	14,691	1,179.2	
1973	1.15	356	9,501	641.9	0.84	70	1,467	116.4	1,035	18,128	1,253.4	
1974	1.16	466	9,538	539.5	0.87	107	2,039	169.5	723	14,637	894.8	
1975	1.23	412	8,130	457.3	0.84	89	1,333	143.2	673	12,723	887.4	
1976	1.08	788	14,837	1,022.8	0.84	86	1,345	140.5	1,244	23,021	1,653.5	
1977	0.92	713	13,721	1,093.8	0.75	51	825	96.1	1,091	20,786	1,700.0	
1978	0.92	470	9,324	689.7	0.44	33	531	109.3	723	14,157	1,147.8	
1979	1.08	273	6,973	342.0	0.60	80	1,219	187.2	500	11,615	750.4	
1980	1.14	285	7,090	337.9	0.38	68	1,036	249.8	396	9,116	659.3	
1981	1.05	369	6,584	483.4	0.46	112	1,740	342.2	566	9,788	969.0	
1982	1.20	706	10,500	744.8	-	-	1,700	-	948	14,100	1,000.2	

Data Source: 1967-1969, ICCAT Statistical Bull. Vol. 7 (1976)
 1970-1980, ICCAT Statistical Bull. Vol. 11 (1981)
 1981, ICCAT Statistical Bull. Vol. 12 (1982)
 1982 provided by ICCAT secretary, 1983

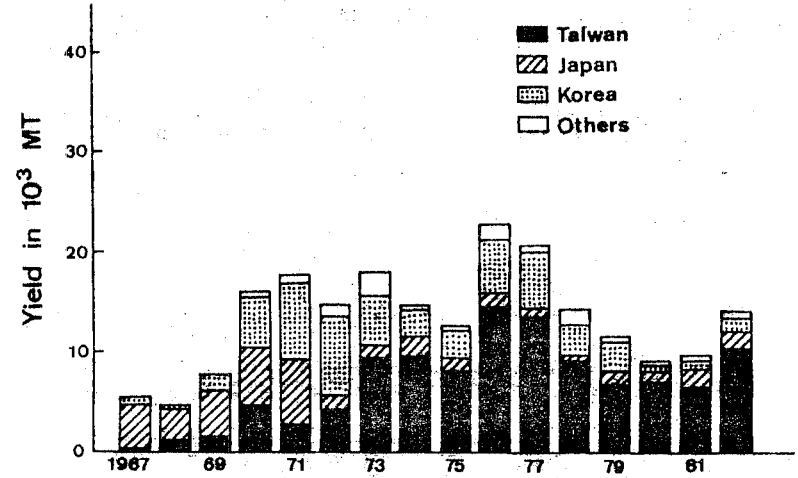


Fig. 1. Yield of albacore by country in North Atlantic longline fishery, 1967-1982.

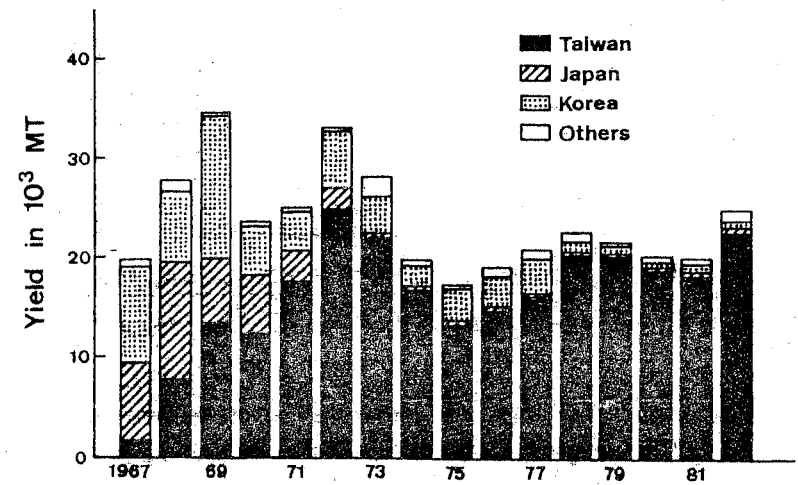


Fig. 3. Yield of albacore by country in South Atlantic longline fishery, 1967-1982.

Table 2. Hook rate, catch in number, yield in weight and overall fishing intensity of albacore in Taiwanese, Japanese and in the whole Longline fishery in the North Atlantic Ocean, 1967-1982.

Year	Taiwanese Longline Fishery				Japanese Longline Fishery				Whole Longline Fishery			
	Hook Rate (K)	Catch in 1000 Fishes	Yield in Tons	Intensity in 1000 hooks/5°sq.	Hook Rate (K)	Catch in 1000 Fishes	Yield in Tons	Intensity in 1000 hooks/5°sq.	Catch in 1000 Fishes	Yield in Tons	Intensity in 1000 hooks/5°sq.	
1967	3.58	41	1,700	15.0	3.60	437	7,719	149.7	1,003	19,798	346.3	
1968	4.04	722	7,600	235.6	3.75	739	11,857	254.9	2,092	27,842	701.9	
1969	2.87	850	13,400	375.0	2.82	244	6,331	137.5	1,916	34,561	897.8	
1970	2.06	672	12,325	363.2	2.22	444	5,898	257.2	1,470	23,653	809.7	
1971	2.71	1,272	17,491	603.0	2.25	218	3,218	123.0	1,801	25,022	877.3	
1972	1.91	1,210	24,985	813.7	1.60	148	2,087	116.3	1,660	33,099	1,137.1	
1973	1.57	1,099	22,157	896.5	0.97	38	277	48.1	1,426	28,131	1,184.5	
1974	1.69	973	16,686	736.5	0.95	26	109	33.6	1,163	19,351	896.5	
1975	1.99	1,032	13,384	666.0	0.98	27	306	34.4	1,243	17,369	888.6	
1976	1.66	928	14,600	714.6	0.98	6	73	7.8	1,219	19,148	942.8	
1977	1.87	1,074	16,092	732.3	0.62	8	105	15.4	1,399	20,962	967.7	
1978	1.84	1,424	20,467	997.3	0.51	11	135	26.5	1,587	22,784	1,132.2	
1979	1.62	1,074	20,340	844.7	0.35	8	105	27.7	1,355	21,888	931.4	
1980	1.72	1,091	18,710	805.2	0.38	26	333	87.7	1,807	20,571	964.5	
1981	1.43	1,102	18,187	991.1	0.29	40	528	170.4	1,840	20,335	1,260.0	
1982	1.53	1,311	22,800	1,096.0	-	1	600	-	1,437	25,000	1,201.8	

Data Source: 1967-1969, ICCAT Statistical Bull. Vol. 7 (1976)
 1970-1980, ICCAT Statistical Bull. Vol. 11 (1981)
 1981, ICCAT Statistical Bull. Vol. 12 (1982)
 1982, provided by ICCAT secretariat, 1983

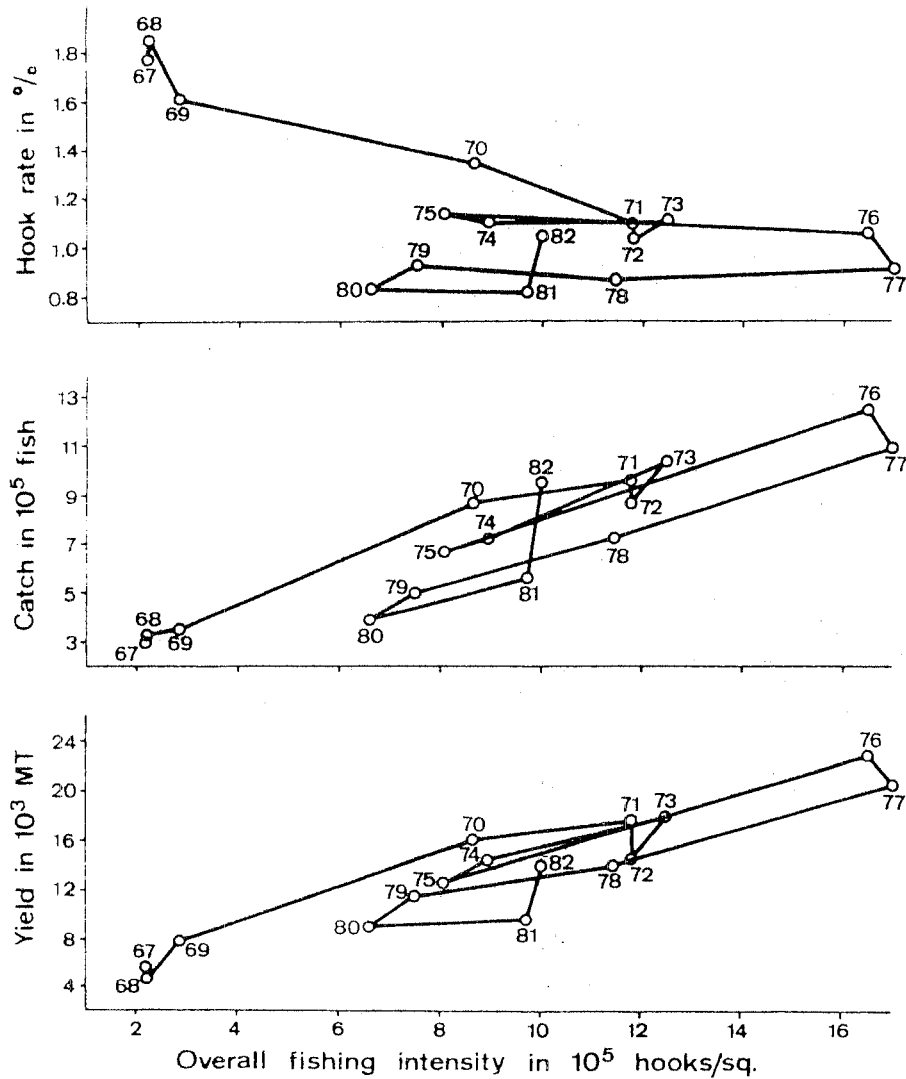


Fig. 2 Hook rate, catch and yield of albacore against overall fishing intensity in the North Atlantic longline fishery, 1967-1982.

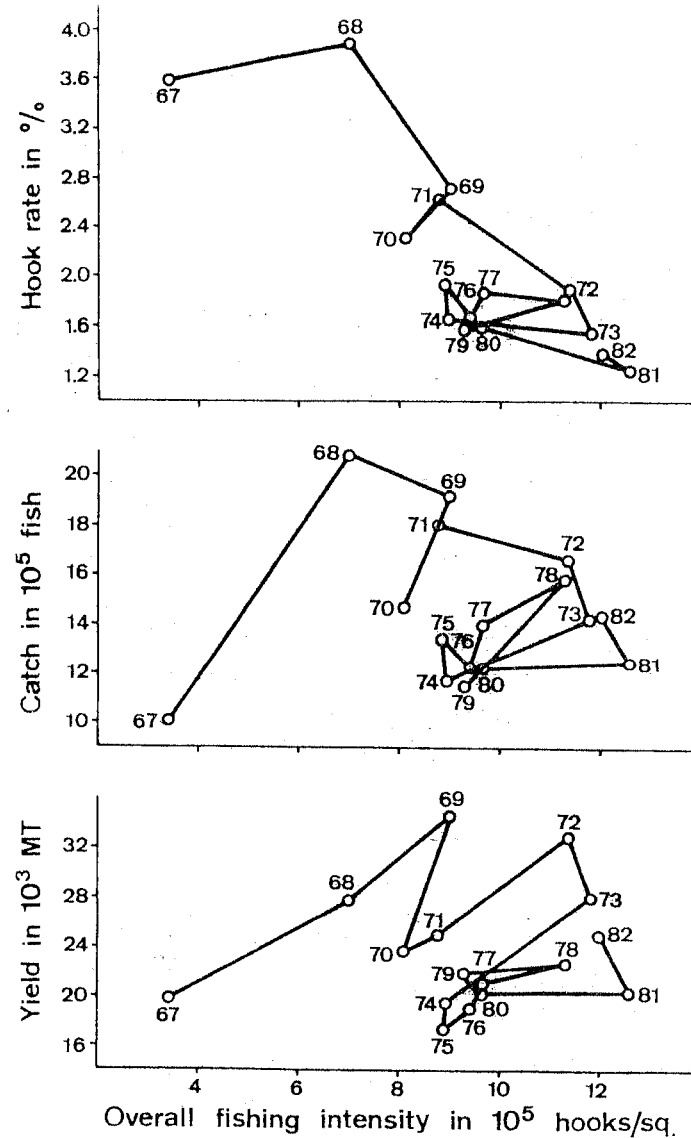


Fig. 4 Hook rate, catch and yield of albacore against overall fishing intensity in the South Atlantic longline fishery, 1967-1982.