

OVERALL FISHING INTENSITY AND YIELD BY THE ATLANTIC LONGLINE FISHERY FOR ALBACORE, 1967-1983

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SUMMARY

This report is to update the series of previous reports (Sun and Yang, 1983, 1984 and Yang and Sun, 1984) on the catch and fishing intensity of the Atlantic albacore caught by the longline fishery through 1983. The results indicate that both the yield and the CPUE of the North Atlantic longline fishery in 1983 were larger than those of 1982, while the fishing intensity was 10.1 percent lower than that of 1982. The CPUE of the South Atlantic longline fishery in 1983 increased slightly compared to 1982. In 1983, both yield and fishing intensity reached their minima of 11,600 MT and 643,700 hooks, respectively.

RESUME

Ce rapport met à jour les séries de données figurant dans des rapports antérieurs (Sun et Yang 1983, 1984 et Yang et Sun 1984) sur les prises et l'intensité de pêche du germon de l'Atlantique capturé par la pêcherie palangrière en 1983. Les résultats indiquent qu'en 1983 le rendement et la CPUE de la pêcherie palangrière de l'Atlantique nord ont été plus importants que ceux de 1982, alors que l'intensité de pêche était de 10,1% plus faible que celle de 1982. En 1983, la CPUE de la pêcherie palangrière de l'Atlantique sud s'est légèrement accrue par rapport à 1982. En 1983, la production et l'intensité de pêche ont respectivement atteint leur minimum de 11.600 TM et 643.700 hameçons.

RESUMEN

El informe actualiza las serie de informes previos (Sun y Yang 1983, 1984 y Yang y Sun 1984) sobre la captura e intensidad de pesca del atún blanco capturado por la pesquería de palangre durante 1983. Los resultados señalan que los rendimientos y la CPUE de la pesquería de palangre del Atlántico Norte en 1983 se incrementaron con respecto a 1982, mientras que la intensidad de pesca fue un 10.1% inferior a la de 1982. La CPUE de la pesquería de palangre del Atlántico Sur aumentó ligeramente en relación a la de 1982. En 1983, tanto el rendimiento como la intensidad de pesca alcanzaron sus mínimos de 11.600 t y 643.700 anzuelos respectivamente.

Introduction

Due to the low fish prices and rather high fuel prices in Cape Town and to the relatively high fish prices and greater demand in Puerto Rico, a drastic change in the operation of Taiwanese fleets in the Atlantic occurred in 1983. Vessels of 300 tons and above moved from the Southern to the Northern Hemisphere while those between 200 and 300 tons shifted from the Atlantic to the Indian Ocean. As a result, the Taiwanese fleets' albacore catch in the North Atlantic increased from 10,500 tons in 1982 to 14,300 tons in 1983 and decreased in the South Atlantic from 22,800 tons to 9,500 tons over the same time period.

This report is to update the series of previous reports (Sun and Yang 1983, 1984 and Yang and Sun 1984) on the catch and fishing intensity of the Atlantic albacore caught by the longline fishery through 1983.

Data and Processing

The data in this report consists of yield statistics (ICCAT, 1982, 1981, 1983, 1984) and monthly unit area ($5^{\circ} \times 5^{\circ}$) catch statistics (Taiwan Fisheries Bureau, 1968-1970; Institute of Oceanography, National Taiwan University, 1971-1984; Fisheries Agency of Japan, 1969-1984). The average year and procedures which serve to estimate total fishing intensity and total catch in numbers of albacore for all the North and South Atlantic longline fleets remain the same as those described in detail in the previous report (Sun and Yang, 1984), with one exception in 1983. We were unable to use Japanese 1983 monthly unit area ($5^{\circ} \times 5^{\circ}$) catch and effort data as it is yet to be published. Thus, the North Atlantic longline fisheries' overall fishing intensity could only be obtained 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. Similarly, this procedure was employed in estimating total albacore catch (numbers) for both the South and North Atlantic Ocean.

Result

Northern Stock

Total 1983 North Atlantic albacore yield by longline fleets increased 1,910 MT (approximately 14.5%) over 1982, reaching 15,100 MT (Table 1, Fig. 1) As indicated by catch statistics (by country), Taiwan and Korea were the principal albacore longline fishing countries. The Taiwanese fleet harvested 14,300 MT (94.7%) and the Korean fleet gathered 478 MT (3.117%).

1983 estimated overall fishing intensity for the total northern stock was 958,000 hooks (effective effort / 5° square), 10.1% less than that of 1982. The CPUE (number of fish per 100 effective hooks) increased slightly from 1.141 in 1982 to 1.196 in 1983. Yield in weight, catch in number and CPUE were plotted against overall fishing intensity (Fig. 2). The relationship between yield and fishing intensity for the whole northern stock indicates that in recent years with the exception of 1983, annual yield rose with the increasing fishing intensity. In 1983, however, yield reached 15,100 MT, its highest point since 1978 despite a decrease in fishing intensity.

Southern Stock

Total albacore yield by longline fleets in the South Atlantic Ocean in 1983 was 11,600 MT (Table 2, Fig. 3). This statistic represents a fall of 54.1% (13,675 MT) from 1982. It is apparent that this abrupt decrease in yield

was due to the declining catch of the Taiwanese longline fleet. The 1983 albacore yield by the Taiwanese fleet reached its lowest point since 1969, 9,500 MT, about 58.3% (13,300 MT) less than that of 1982. For the total southern stock, estimated overall intensity in 1983 was 643,700 hooks (effective effort / 5° square), a 51.4% (672,900 hooks) decline from 1982. The CPUE however, increased slightly from 1.414 in 1982 to 1.469 in 1983. Fishing intensity's relationship to yield for the entire southern stock (Fig. 4) indicates that the 1982 yield was 25,275 MT at the same time that fishing intensity peaked at 1,316,600 hooks. In contrast to 1982, in 1983 both yield and fishing intensity reached their minima of 11,600 MT and 643,700 hooks respectively.

References

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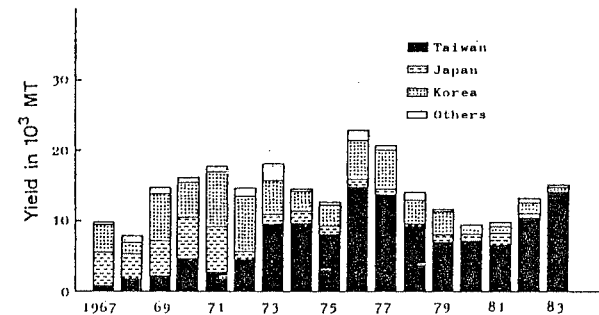


Fig. 1 Yield of albacore by country in North Atlantic longline fishery, 1967-1983.

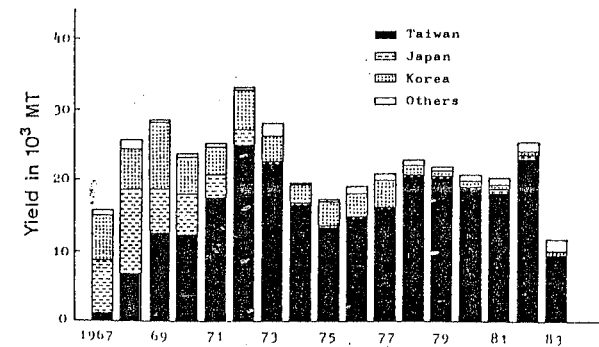


Fig. 3 Yield of albacore by country in South Atlantic longline fishery, 1967-1983.

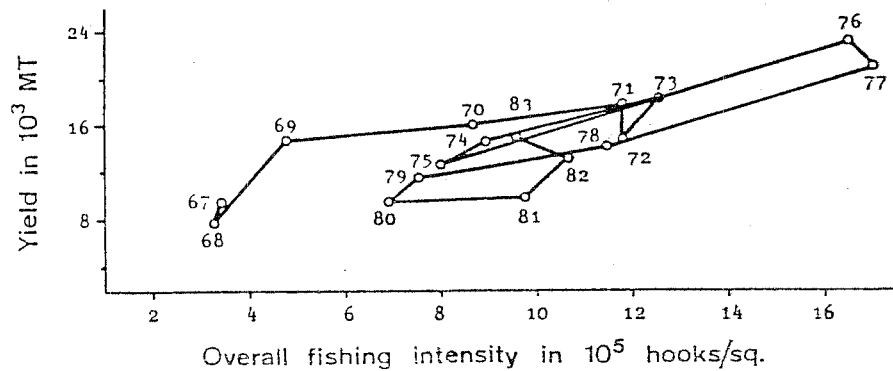
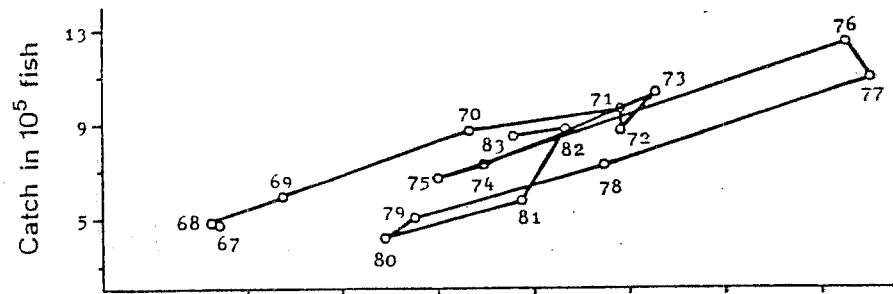
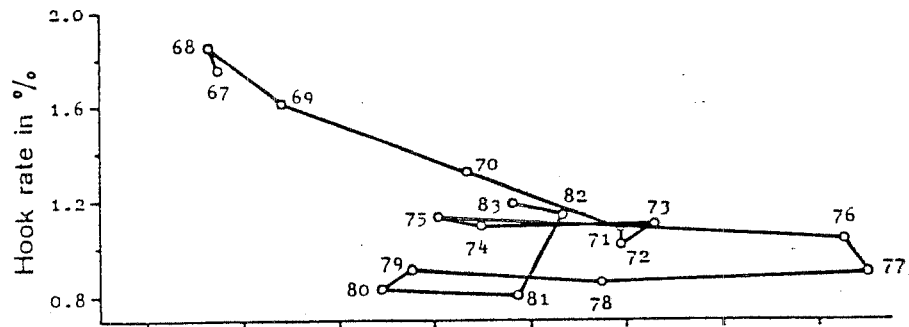


Fig. 2 Hook rate, catch and yield of albacore against overall fishing intensity in the North Atlantic longline fishery, 1967-1983.

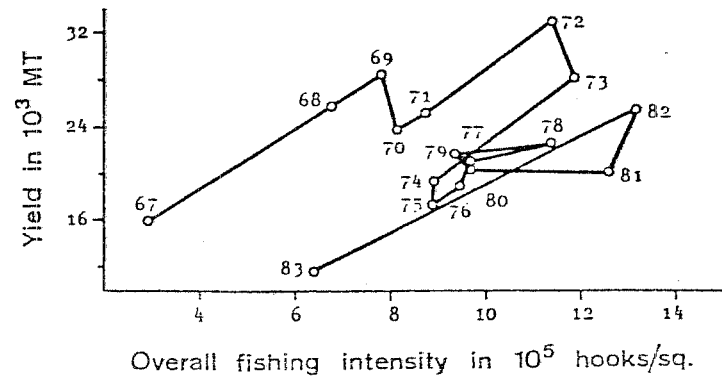
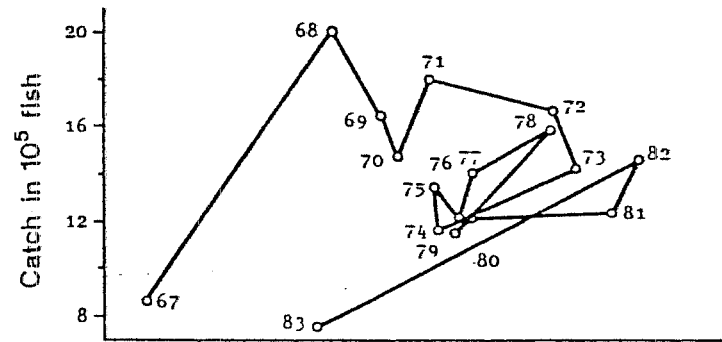
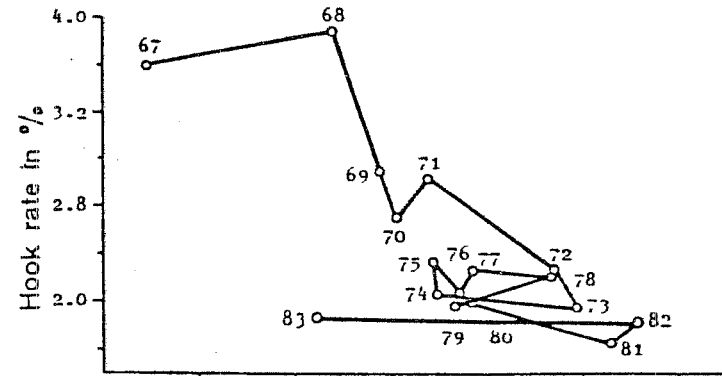


Fig. 4 Hook rate, catch and yield of albacore against overall fishing intensity in the South Atlantic longline fishery, 1967-1983.

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, 1967-1983.

Year	Taiwanese Longline Fishery				Japanese Longline Fishery				Whole Longline Fishery		
	Hook Rate (%)	Catch in 1000 fishes	Yield in* Tons	Intensity in 1000 hooks/5*sq.	Hook Rate (%)	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	761	11.1	1.75	251	4,771	186.2	464	9,549	340.6
1968	2.16	137	1,907	81.0	1.67	177	3,306	137.7	467	7,746	325.0
1969	1.80	134	2,352	100.5	1.47	146	4,717	126.8	586	14,794	475.7
1970	1.12	217	4,675	253.9	1.50	357	5,875	314.6	874	16,061	865.3
1971	1.12	171	2,871	203.0	1.07	333	6,472	415.4	963	17,850	1,181.4
1972	1.12	277	4,410	341.8	0.72	63	1,319	118.2	874	14,727	1,182.5
1973	1.15	556	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	2,059	169.5	723	14,637	894.8
1975	1.23	412	8,130	457.3	0.84	89	1,331	143.2	673	12,710	806.7
1976	1.08	788	14,837	1,021.8	0.84	86	1,345	140.5	1,243	23,006	1,652.4
1977	0.92	713	13,723	1,093.8	0.75	51	825	96.1	1,096	20,869	1,706.9
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	0.39	68	1,036	249.8	411	9,470	684.9
1981	1.05	369	6,584	481.9	0.46	112	1,740	342.2	567	9,816	971.8
1982	1.30	706	10,500	744.8	0.40	47	781	166.2	880	13,190	1,065.2
1983	1.20	802	14,300	907.2	—	—	0	—	847	15,100	958.0

* Data Source: 1967-1969, ICCAT Historical Statistical Bull. Vol. 2 (1982)
 1970-1971, ICCAT Statistical Bull. Vol. 11 (1981)
 1972-1982, ICCAT Statistical Bull. Vol. 13 (1983)
 1983, Provided by ICCAT Secretary, 1984.

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 South Atlantic Ocean, 1967-1983.

Year	Taiwanese Longline Fishery				Japanese Longline Fishery				Whole Longline Fishery		
	Hook Rate (%)	Catch in 1000 fishes	Yield in* Tons	Intensity in 1000 hooks/5° sq.	Hook Rate (%)	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	1,059	15.0	3.60	437	7,719	149.7	865	15,883	298.0
1968	4.04	722	6,792	235.6	3.75	739	11,857	254.9	2,010	25,650	674.6
1969	2.87	850	12,546	375.0	2.22	244	6,331	137.5	1,651	28,493	773.6
1970	2.36	672	12,225	363.2	2.22	454	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	1,664	33,163	1,139.2
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	19,551	896.5
1975	1.99	1,032	13,384	666.0	0.98	27	306	34.4	1,345	17,382	889.3
1976	1.66	928	14,600	714.6	0.98	6	73	7.8	1,220	19,163	943.5
1977	1.87	1,074	16,092	732.3	0.62	8	105	15.4	1,401	20,979	968.5
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	1,155	21,826	931.3
1980	1.72	1,091	18,710	805.2	0.38	26	333	87.7	1,209	20,618	966.7
1981	1.43	1,102	18,187	991.1	0.29	40	558	170.4	1,239	20,335	1,260.0
1982	1.53	1,311	22,800	1,096.0	0.42	43	569	121.3	1,464	25,275	1,316.6
1983	1.47	617	9,500	527.2	—	—	0	—	753	11,600	643.7

* Data Source: 1967-1969, ICCAT Historical Statistical Bull. Vol. 2 (1982)
1970-1971, ICCAT Statistical Bull. Vol. 11 (1981)
1972-1982, ICCAT Statistical Bull. Vol. 13 (1983)
1983, Provided by ICCAT Secretary, 1984.