

OVERALL FISHING INTENSITY AND YIELD BY THE ATLANTIC LONGLINE FISHERY FOR ALBACORE, 1967-1980

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SUMMARY

The longline fishing effort on albacore, for 1967-1980, was standardized by Honma's method (1973), using the years from 1970 to 1980 as the "average year".

RESUME

L'effort palangrier portant sur le germon, pour les années 1967 à 1980, a été standardisé par la méthode d'Honma (1973) en utilisant les années 1970 à 1980 comme "année moyenne".

RESUMEN

El esfuerzo de pesca con palangre sobre el atún blanco para 1967-80, fue normalizado mediante el método de Honma (1973), utilizando los años comprendidos entre 1970 a 1980 como "años promedio".

The longline fishing effort on albacore, for 1967-1980, was standardized by Honma's method (1973), using the years from 1970 to 1980 as the "average year".

Materials and Methods

The data utilized in this report consists of yield statistics (ICCAT 1977, 1981) and catch statistics by unit area ($5^{\circ} \times 5^{\circ}$) by month. The period of 1970-1980 was used to determine the "average year" for the present calculation of fishing intensity using Honma's method (1973).

The Taiwanese fishing intensity on the north and south stocks of Atlantic albacore were estimated based on the average year distribution pattern of hook rates (d_{ij}), which was derived by combining the data of the Taiwanese and Japanese longline fleets. The Japanese fishing intensity was estimated based on the same d_{ij} , assuming the Japanese and Taiwanese longline fleets have equal fishing efficiency to this species.

These separate fishing intensities were then added together and multiplied by the quotient of the total catch over the combined countries' total catch. The total catch (in number) of albacore was similarly estimated in the north and south Atlantic by the north and south whole longline fishery.

Results

North Stock:

The total albacore yield by longline fleets in the north Atlantic in 1980 was 9 116 MT (Table 1), about 22% (2,500 MT) less than that of 1979; catch by country indicates that the Taiwanese fleet harvested 7,090 MT (78%), Japanese 1,036 MT (11%) and Korean 797 MT (9%) (see ICCAT 1981).

The estimated overall fishing intensity in 1980 was 659,270 hooks (effective effort / 5 square) for the total north stock, which is a 12% decrease compared to 1979. Hooking rate also decreased slightly to 0.829 from 0.917 of 1979. The relationship of yield to fishing intensity for the whole north stock (Fig. 1) indicates that since 1977 the annual yield decreased rapidly with decreasing fishing intensity.

2. South Stock:

The total albacore yield by longline fleets in the south Atlantic in 1980 was 20,571 MT (Table 2) about 6% (1,257 MT) less than that of 1979; catch by country indicates that the Taiwanese fleet harvested 18,710 MT (91%), Korean 690 MT (3%) and Japanese (1.6%) (see ICCAT 1981).

The estimated overall fishing intensity in 1980 was

964,510 hooks (effective effort / 5 square) for the total south stock, which increased by 3.5% compared to 1979. The hooking rate was 1.591 almost the same as in 1979. The relationship of yield to fishing intensity for the whole south stock (Fig. 2) indicates that since 1974 the annual yield and fishing intensity had little fluctation and shows that the fishery and the stock has been fairly stable.

References

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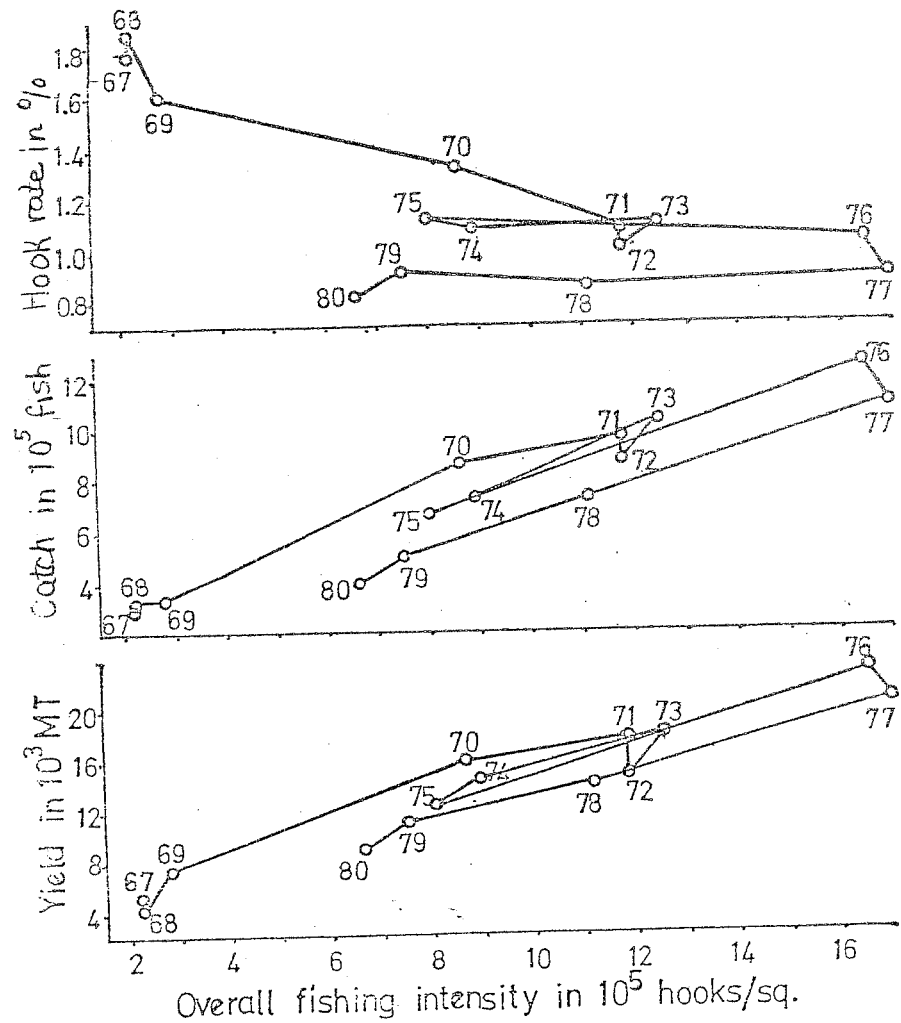


Fig. 1. Hook rate, catch and yield of albacore against overall fishing intensity in the North Atlantic longline fishery, 1967-1980

Table 1. Hook rate, catch in number, yield in weight and overall fishing intensity of albacore in Taiwan, Japan and in the whole longline fishery in the North Atlantic Ocean, 1967-1980

Year	Taiwan Longline Fishery				Japan Longline Fishery				Total 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	2.074	17.52	420	11.12	1.754	250.97	4,771	186.15	301.41	5,491	221.47
1968	2.157	136.60	1,099	80.95	1.670	177.45	3,306	137.68	321.18	4,505	223.59
1969	1.799	133.84	1,498	100.46	1.473	145.66	4,717	126.75	351.46	7,815	285.71
1970	1.115	217.06	4,675	253.85	1.500	356.82	5,875	314.56	873.65	16,061	865.33
1971	1.121	170.75	2,871	202.95	1.065	333.30	6,472	415.42	963.00	17,850	1,181.42
1972	1.124	276.90	4,410	341.77	0.718	63.13	1,320	118.17	871.80	14,691	1,179.22
1973	1.150	556.30	9,501	641.91	0.836	70.17	1,467	116.43	1,035.44	18,128	1,253.38
1974	1.159	465.71	9,538	539.50	0.874	107.03	2,059	169.47	722.90	14,637	894.81
1975	1.226	411.77	8,130	457.25	0.842	88.67	1,331	143.16	672.98	12,723	807.41
1976	1.077	787.90	14,837	1,021.80	0.843	86.38	1,345	140.45	1,243.77	23,021	1,653.46
1977	0.917	712.54	13,723	1,093.77	0.754	51.10	825	96.08	1,091.09	20,786	1,700.04
1978	0.922	469.80	9,324	689.70	0.441	33.18	531	109.33	722.55	14,157	1,147.83
1979	1.083	372.84	6,973	342.01	0.602	80.00	1,219	187.24	500.27	11,615	750.39
1980	1.138	285.32	7,090	337.92	0.386	67.58	1,036	249.75	395.89	9,116	659.27

* Data Source: 1967-1969, ICCAT Statistical Bull. Vol. 7 (1976)
1970-1980, ICCAT Statistical Bull. Vol.11 (1981)

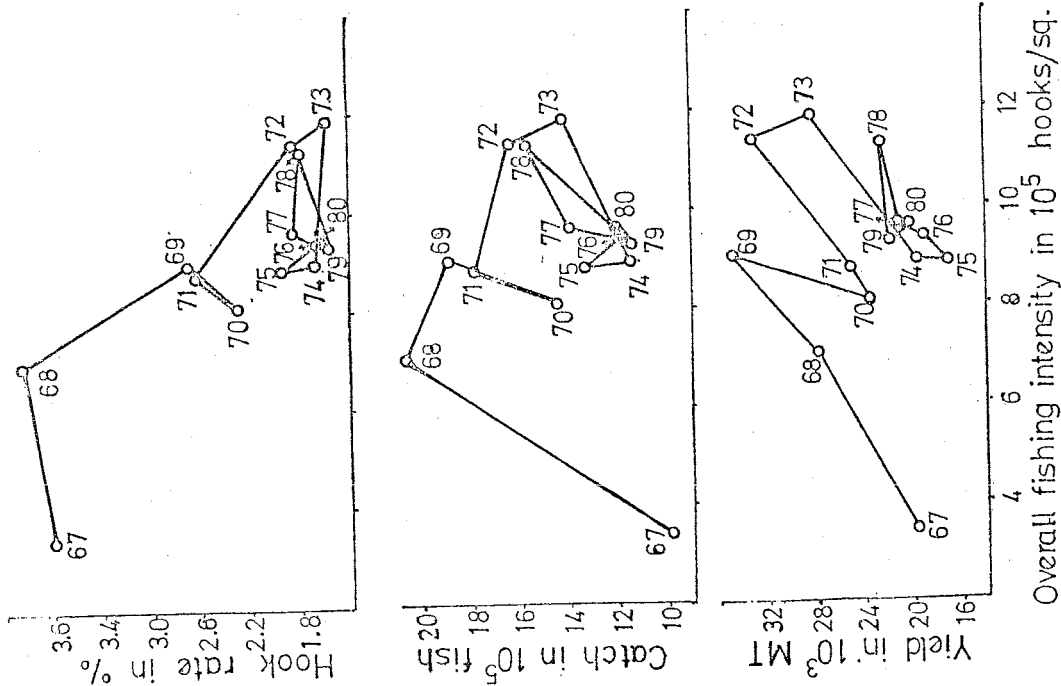


Fig. 2. Hook rate, catch and yield of albacore against overall fishing intensity in the South Atlantic longline fishery, 1967-1980

Table 2. Hook rate, catch in number, yield in weight and overall fishing intensity of albacore in Taiwan, Japan and in the whole longline fishery in the South Atlantic Ocean, 1967-1980

Year	Taiwan Longline Fishery				Japan Longline Fishery				Total Longline Fishery		
	Hook Rate (%)	Catch in 1000 fishes	Yield in* Tons	Intensity in 1000 hooks/5 ^o sq.	Hook Rate (%)	Catch in 1000 fishes	Yield in* Tons	Intensity in 1000 hooks/5 ^o sq.	Catch in 1000 fishes	Yield in* Tons	Intensity in 1000 hooks/5 ^o sq.
1967	3.583	40.60	1,700	15.03	3.600	436.71	7,719	149.74	1,003.26	19,798	346.34
1968	4.038	722.24	7,600	235.55	3.748	739.45	11,857	254.94	2,091.61	27,842	701.87
1969	2.867	849.78	13,400	375.02	2.217	243.98	6,331	137.51	1,915.84	34,561	897.75
1970	2.356	672.41	12,225	363.20	2.217	453.95	5,898	257.23	1,470.05	23,653	809.74
1971	2.705	1,271.73	17,491	603.03	2.252	218.46	3,218	123.03	1,800.55	25,022	877.27
1972	1.911	1,209.62	24,985	813.67	1.596	147.79	2,087	116.34	1,659.61	33,099	1,137.06
1973	1.568	1,098.75	22,157	896.51	0.968	38.41	277	48.14	1,425.93	28,131	1,184.54
1974	1.693	973.48	16,686	736.50	0.946	25.90	109	33.62	1,163.38	19,551	896.49
1975	1.986	1,031.58	13,384	665.98	0.982	26.77	306	34.43	1,342.76	17,369	888.64
1976	1.663	927.53	14,600	714.63	0.977	6.34	73	7.80	1,218.68	19,148	942.76
1977	1.873	1,073.56	16,092	732.27	0.622	7.62	105	15.43	1,399.26	20,962	967.66
1978	1.838	1,424.47	20,467	997.26	0.509	10.63	135	26.50	1,587.09	22,784	1,132.19
1979	1.615	1,024.14	20,340	844.69	0.348	7.75	105	27.71	1,155.07	21,828	931.42
1980	1.724	1,091.37	18,710	805.19	0.380	26.38	333	87.68	1,207.44	20,571	964.51

* Data Source: 1967-1969, ICCAT Statistical Bull. Vol. 7 (1976)
1970-1980, ICCAT Statistical Bull. Vol.11 (1981)