

INFORMATION ON SWORDFISH CATCH BY THE JAPANESE LONGLINE FISHERY IN THE MEDITERRANEAN SEA

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SUMMARY

Compared to the Atlantic, the history of the Japanese longline fishery is short. This fishery started its operations in 1972. The Mediterranean Sea is an important fishing ground for this fishery for bluefin tuna. This is obvious from the fact that more than 97% of the catch has been bluefin. Although swordfish is the second most important species for the Japanese longline fishery in this area, catch data and associated information are very minor and limited.

RÉSUMÉ

En ce qui concerne l'Atlantique, l'histoire de la pêche palangrière japonaise est récente, car elle a débuté en 1972. La Méditerranée est un important lieu de pêche de thon rouge pour cette pêcherie, ce qui est démontré par le fait que plus de 97 % de ses prises se composent de thon rouge. Bien que l'espadon occupe le deuxième rang en ce qui concerne la pêche palangrière japonaise dans cette zone, la prise est minime et l'information la concernant limitée.

RESUMEN

En comparación con el Atlántico, la historia de la pesquería palangrera japonesa es corta, ya que se inició en 1972. El Mediterráneo es una zona importante para esta pesquería en lo que respecta al atún rojo. Esto es obvio basándose en el hecho que mas del 97% de la capturas ha sido de atún rojo. Si bien el pez espada es la segunda especie en importancia para la pesquería de palangre japonesa en esta zona, la captura y la información asociada es escasa y limitada.

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1. Introduction

This paper presents updated information on the Japanese longline fishery in the Mediterranean Sea from Miyabe and Warashina (1990) and Takeuchi (1996), highlighting at swordfish.

2. History of the Japanese longline fishery in the Mediterranean

The Japanese longline fishery first operated in the Mediterranean Sea in 1972, and continued its operations since then. The amount of fishing effort exerted fluctuated between 100 thousand and 2.5 million hooks as it is shown in Fig. 1. It has three high peaks locating at 1974-76, 1984-86 and 1994-.

Catches are dominated by bluefin, and swordfish is a minor component of the catch (Table 1). Fishing season is limited in the Mediterranean Sea during April to July (Table 2), and this has not changed much except the early few years. This is because the fleet targets almost exclusively on large bluefin in pre-spawning condition. In fact, fishing for bluefin starts in March just outside of Mediterranean Sea (around off Gibraltar) before the fishing in the Mediterranean Sea starts. The fleet follows bluefin schools which come into the Mediterranean Sea for spawning. After the adoption of the first regulation on bluefin, Japan set a domestic regulation which prohibits operation during high spawning season (i.e., late May and June until 1994 and June and July since 1995).

Fishing areas (Figs. 2 and 3) locate various part of the Mediterranean Sea during the initial stage, but operations were limited in the western part of the Mediterranean Sea (west of 20E) in later years. Catches are scattered in wide area (Fig. 3) and there appears to be no good fishing ground with constant high catches.

3. Fishing operations

Longline operation is made once per day. Gear setting starts just before dawn. Hauling starts in the afternoon and lasts 10 to 12 hours. The amount of hooks set per day has increased as seen in Fig. 4 and Table 3 from 2000 in the mid 1970s to 2800 in the mid 1980s. Then it became stable thereafter. Number of hooks between floats had been very constant; most of them were 4 hooks between floats (Table 4). However, it is obvious that there is an increasing tendency to 5, 6 and 7 since 1993.

4. CPUE and size of Swordfish

Nominal CPUE of swordfish in the Mediterranean Sea was plotted in Fig. 5. In general, CPUE showed continued decline and leveled off since 1991. The size data are very limited, and because of this it is unable to construct catch-at-size without data substitution for swordfish caught in the Mediterranean Sea since 1991 (Fig. 6).

References

- Miyabe, N. and I. Warashina. 1990. General description of Japanese longline fishery in the Mediterranean and some information on the size of bluefin imported from Mediterranean countries to Japan, ICCAT CVSP 33: 179-184.
- Takeuchi, Y. 1996. Status report of the Japanese tuna longline fishery in the Mediterranean Sea with special reference to swordfish. ICCAT CVSP 45(1):107-113.

Table 1. Catch (MT) of bluefin and swordfish by the Japanese longline fishery in the Mediterranean Sea.

Year	Bluefin	Swordfish	Year	Bluefin	Swordfish
72	112	0	86	341	7
73	246	0	87	280	3
74	2195	0	88	258	4
75	1260	0	89	127	1
76	968	1	90	172	2
77	520	0	91	85	1
78	61	2	92	123	2
79	99	3	93	793	4
80	119	1	94	536	2
81	100	0	95	813	4
82	961	5	96	765	5
83	677	6	97	185	
84	1036	19	Total	9360	51
85	1006	14			

Table 2. Monthly fishing effort (hooks in thousand) deployed by the Japanese longline fishery in the Mediterranean Sea.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
72	0	5	0	0	0	25	28	6	54	3	0	0
73	0	0	0	0	13	122	8	0	0	0	0	0
74	0	0	0	46	133	703	409	496	64	0	0	0
75	11	0	0	83	390	31	1075	18	2	0	0	0
76	0	0	2	108	844	3	527	36	0	0	0	0
77	0	0	6	0	162	0	278	0	0	0	0	0
78	0	0	0	4	71	0	35	0	0	0	0	0
79	0	0	0	14	83	3	105	0	0	0	0	0
80	0	0	7	2	231	11	9	0	0	0	0	0
81	0	0	0	9	76	0	36	0	0	0	0	0
82	0	0	0	31	62	58	716	0	0	0	0	0
83	0	0	16	33	484	0	459	26	0	0	0	0
84	0	0	0	228	916	114	650	28	6	0	0	0
85	0	0	4	603	1342	35	83	0	0	0	0	0
86	0	0	0	158	925	17	26	0	0	0	0	0
87	0	0	0	171	639	0	0	0	0	0	0	0
88	0	0	4	164	630	0	44	0	0	0	0	0
89	0	0	0	97	319	0	30	0	0	0	0	0
90	0	0	0	16	306	0	0	0	0	0	0	0
91	0	0	0	13	270	0	3	0	0	0	0	0
92	0	0	0	20	473	0	11	0	0	0	0	0
93	0	0	5	22	910	89	231	0	0	0	0	0
94	0	0	0	40	1692	2	0	0	0	0	0	0
95	0	0	0	10	1170	34	0	0	0	0	0	0
96	0	0	0	222	2509	1	0	0	0	0	0	0
97	0	0	0	101	600	7	0	0	116	118	138	69

Table 3. Number of sets tabulated by hooks per set (in hundred) obtained from the Japanese longline fishing statistics in the Mediterranean Sea.

Year	<11	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	30<	Ave.
72	10	2	24	1	4	19	1	0	0	1	0	7	1	2	0	0	0	0	0	0	0	0	1387
73	0	0	0	0	6	41	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1527
74	26	9	48	18	37	46	30	42	104	140	136	49	72	51	3	11	2	2	3	3	0	0	1819
75	9	0	7	3	20	8	54	54	134	45	159	41	56	14	7	32	4	21	0	0	0	1	1943
76	5	1	12	0	2	12	42	14	38	10	196	122	187	52	24	5	0	0	0	0	0	16	2063
77	0	0	0	0	0	1	4	0	31	1	14	14	114	14	0	0	0	12	0	0	0	0	2139
78	0	0	0	0	1	0	2	6	4	0	5	10	24	2	0	0	0	0	0	0	0	0	2036
79	1	0	26	2	1	0	3	0	1	5	7	25	7	13	11	0	0	0	4	0	0	0	1900
80	0	0	0	0	0	0	1	0	0	1	3	23	31	30	38	0	0	0	0	0	0	0	2250
81	0	0	4	0	0	0	0	0	0	1	15	0	19	0	18	0	0	0	0	0	0	0	2135
82	0	0	0	0	0	0	0	0	0	0	0	0	108	28	97	25	20	22	15	0	0	0	2386
83	0	1	2	0	1	2	2	0	10	2	26	16	62	57	98	3	45	20	0	0	3	21	2351
84	0	0	1	0	0	0	2	3	21	35	25	8	91	28	297	74	66	77	26	0	0	0	2382
85	0	0	1	0	1	0	1	2	3	1	5	3	40	44	322	81	128	85	63	33	9	3	2506
86	0	0	1	0	0	0	0	0	2	0	2	2	10	7	60	28	164	100	35	1	8	0	2586
87	0	0	1	0	0	0	0	0	0	0	1	0	0	0	50	6	134	36	29	4	18	3	2628
88	0	0	0	0	0	0	0	0	0	1	0	0	0	1	40	1	154	43	80	0	0	0	2637
89	0	0	0	0	1	0	0	0	0	0	0	0	2	1	28	24	39	11	46	5	0	0	2605
90	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	12	7	28	56	2	0	1	2726
91	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	14	24	48	3	6	6	2762
92	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	35	35	42	65	5	0	0	2683
93	0	0	0	0	1	0	0	0	1	0	1	0	1	1	21	3	41	18	121	54	99	9	2810
94	0	0	1	0	1	0	2	0	0	1	1	1	3	2	39	83	41	114	203	31	82	10	2720
95	0	0	0	0	12	9	2	0	6	1	1	3	16	14	14	25	128	121	66	26	0	0	2566
96	2	0	1	4	1	0	5	4	4	3	0	24	9	27	79	89	135	115	192	193	83	18	2698
97	0	0	0	0	0	0	0	0	0	0	0	2	0	4	16	83	4	75	10	47	26	12	2698

Table 4. Number of Sets counted by hooks between floats from the Japanese longline fishing statistics in the Mediterranean Sea.

YEAR	Un- Known	4	5	6	7	8	9	10	11	12	13	14	<15
72	99	0	0	0	0	0	0	0	0	0	0	0	0
73	100	0	0	0	0	0	0	0	0	0	0	0	0
74	1513	0	0	0	0	0	0	0	0	0	0	0	0
75	151	898	243	7	0	0	0	0	0	0	0	0	0
76	3	1208	190	63	0	57	0	0	0	0	0	0	0
77	0	324	51	49	13	0	0	0	0	0	0	0	0
78	0	73	17	2	17	0	0	0	0	0	0	0	0
79	84	52	43	20	0	0	0	0	0	0	0	0	0
80	24	176	37	28	14	4	0	0	0	0	0	0	0
81	4	112	0	4	0	0	0	0	0	0	0	0	0
82	0	532	99	64	0	0	8	46	0	0	0	0	0
83	41	576	97	42	0	0	0	68	46	0	0	0	0
84	46	1634	9	102	0	0	4	0	0	0	0	0	0
85	72	1780	94	119	0	0	0	0	0	0	0	0	0
86	0	989	5	91	0	0	0	0	0	0	0	0	0
87	0	573	65	92	0	9	0	0	0	0	0	0	0
88	0	725	84	0	0	10	5	0	0	0	0	0	19
89	0	336	0	0	0	0	39	0	30	2	0	0	0
90	0	152	16	19	0	0	0	0	0	0	82	0	22
91	0	254	8	24	0	0	0	0	0	0	0	0	0
92	25	347	82	49	0	0	0	0	0	0	0	0	0
93	0	850	171	16	0	0	0	0	0	0	0	0	5
94	0	1187	347	138	0	0	0	0	0	0	0	0	0
95	0	246	201	606	5	47	0	9	0	0	0	0	23
96	0	131	406	1456	485	42	69	73	0	0	0	0	0
97	0	0	6	183	516	45	0	0	0	0	0	0	0

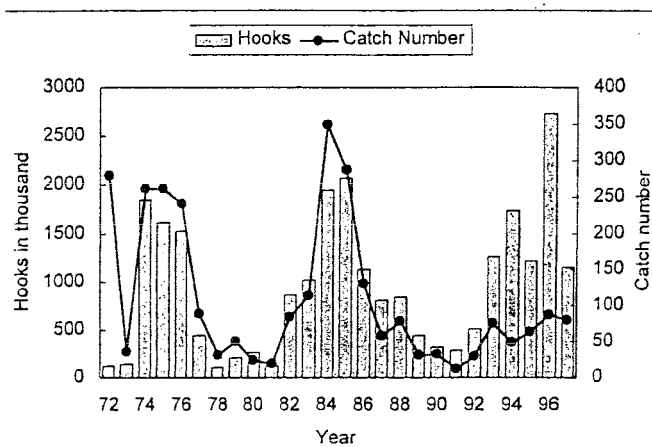


Fig. 1. Effort and catch of swordfish by the Japanese longline fishery in the Mediterranean Sea.

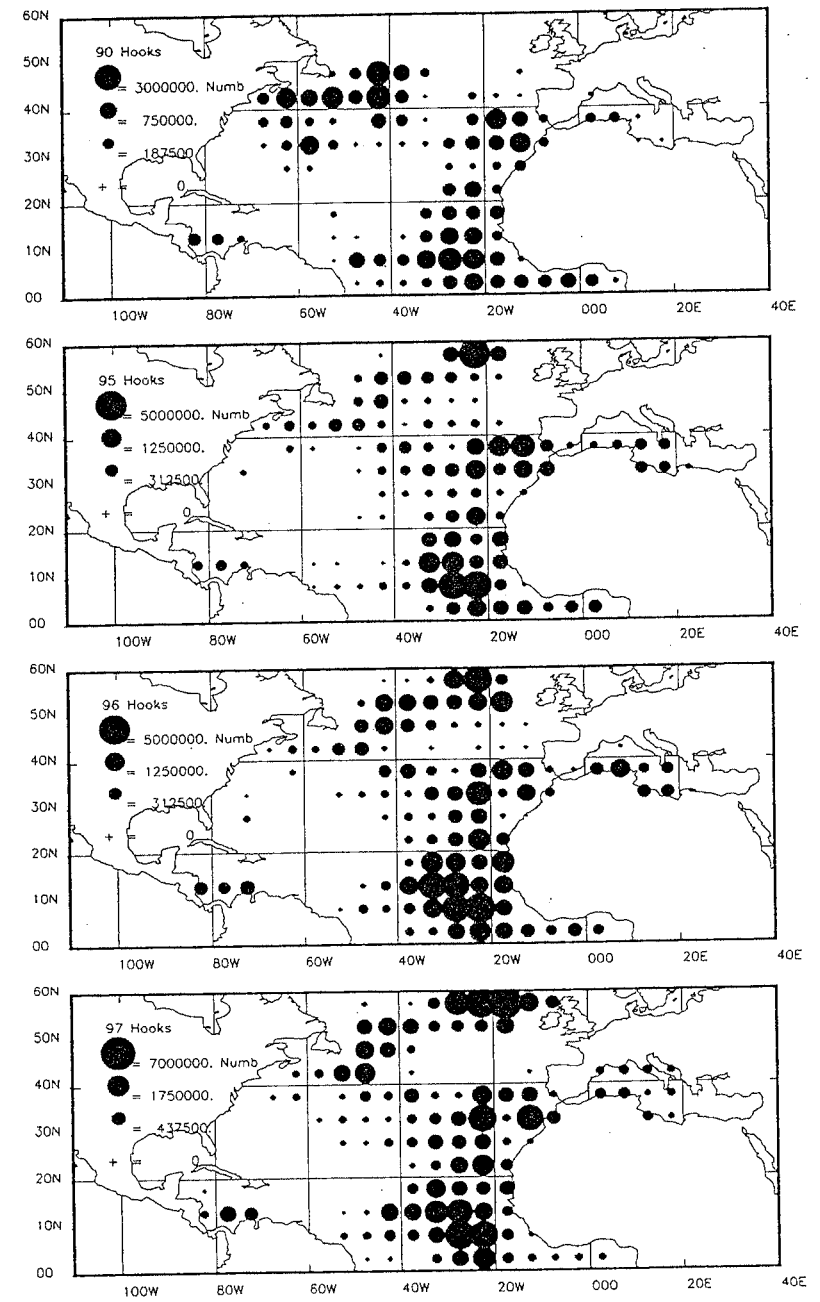
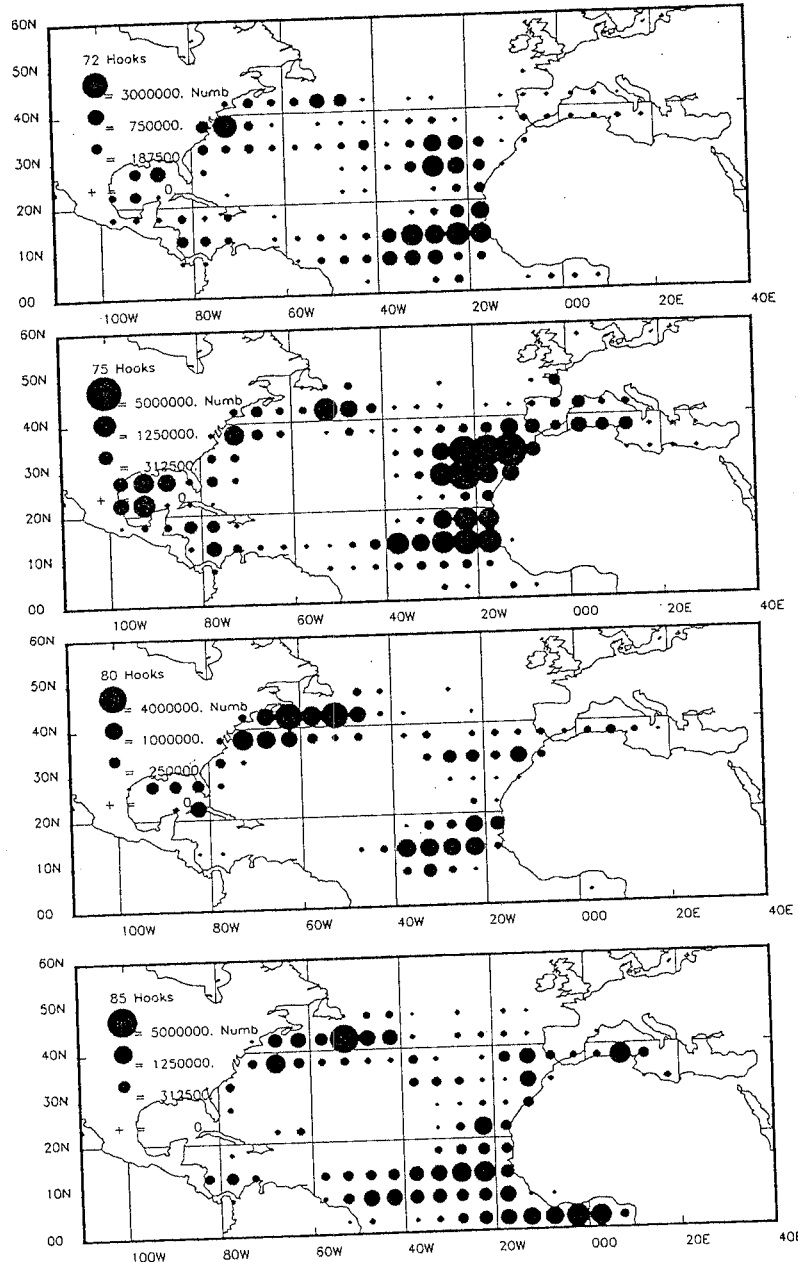


Fig. 2. Distribution of fishing effort (hooks) by the Japanese longline fishery by 5-degree square.

Fig. 2. Continued.

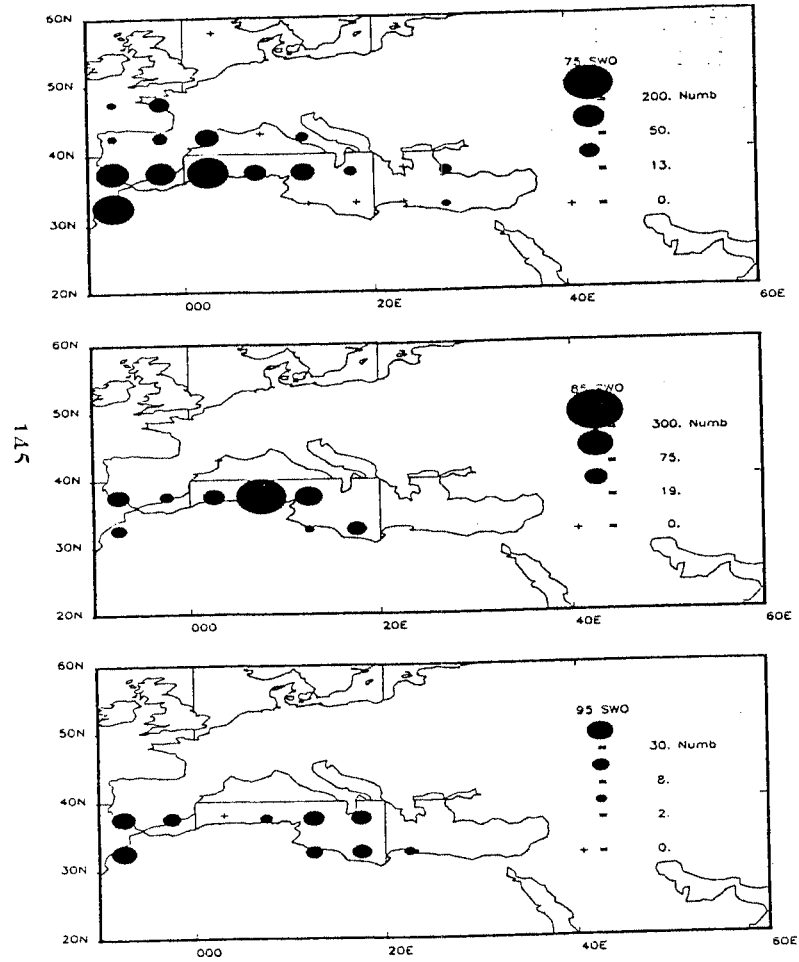


Fig. 3. Distribution of swordfish catch in number by 5-degree square in the Mediterranean Sea.

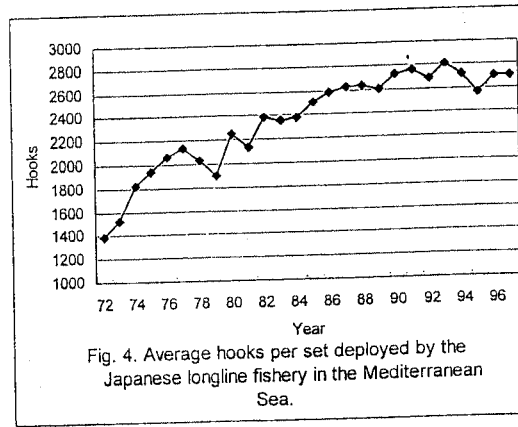


Fig. 4. Average hooks per set deployed by the Japanese longline fishery in the Mediterranean Sea.

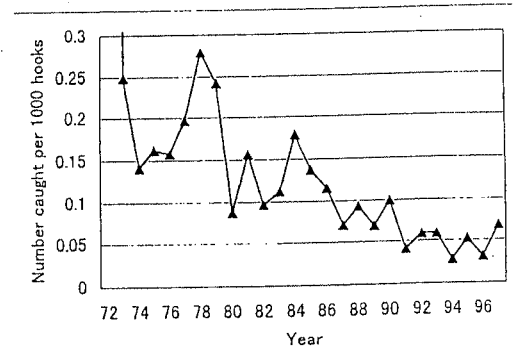


Fig. 5. Trend of Swordfish CPUE in the Mediterranean Sea.

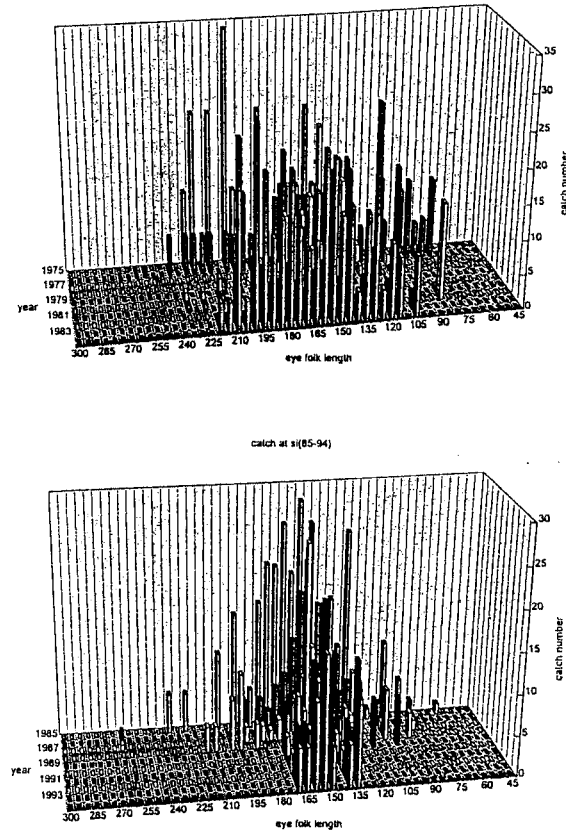


Fig. 6. Catch-at-size of the swordfish caught by the Japanese longline fishery in the Mediterranean Sea. Upper panel :1975-84, lower panel:1985-94.