

## RECENT STATUS OF THE JAPANESE LONGLINE FISHERY IN THE ATLANTIC OCEAN LAYING STRESS ON BILLFISH CATCHES

Yuji Uozumi<sup>1</sup>

### SUMMARY

*The recent status of the Japanese longline fishery in the 1990s was reviewed briefly. The annual fishing effort of the Japanese longline fishery increased to about 90 million hooks in the early 1990s from about 60 million hooks in the 1980s. Fishing effort has been mainly concentrated in the southeast Atlantic in the 1990s, which is the location of the most important fishing grounds for bigeye tuna for the Japanese longline fishery. The Japanese catch of white marlin accounted for about 5% of the total Atlantic catch and has fluctuated around 100 MT. The Japanese catch of blue marlin accounted for nearly 20% in the north Atlantic catch and 40-60% in the south Atlantic catch, and has fluctuated around 1,000-1,500 MT in the total Atlantic. The catch of sailfish and spearfish accounted for less than 5% of the total Atlantic catch. The catch of sailfish was similar to that of spearfish in 1994 and 1995, though the 1995 catch is preliminary.*

### RÉSUMÉ

*La situation de la pêcherie palangrière japonaise dans les années quatre-vingt-dix a été brièvement examinée. L'effort de pêche annuel a augmenté à environ 90 millions d'hameçons au début des années quatre-vingt-dix, alors qu'il n'était que de 60 millions d'hameçons dans les années quatre-vingt. Dans les années quatre-vingt-dix, l'effort de pêche a porté principalement sur la zone Sud-Est de l'Atlantique. Il s'agit de la zone de pêche la plus importante pour les palangriers japonais qui visent le thon obèse. Les captures japonaises de makaire blanc, qui s'élèvent à environ 100 TM, représentaient approximativement 5% des captures totales dans l'Atlantique. Les captures japonaises de makaire bleu représentaient environ 20% dans l'Atlantique Nord et entre 40 et 60% dans l'Atlantique Sud. Elles s'élevaient à 1000-1500 TM dans l'Atlantique entier. Les captures de voiliers et makaires bécunes ont représenté moins de 5% de la prise totale dans l'Atlantique. Le volume de captures de voiliers était similaire au volume de captures de makaires bécunes en 1994 et 1995. Toutefois, il convient de noter que le chiffre de captures de 1995 est encore provisoire.*

### RESUMEN

*Se examinó brevemente el reciente estado de la pesquería de palangre de Japón en los años 90. El esfuerzo pesquero anual de la pesquería de palangre japonesa se incrementó en unos 90 millones de anzuelos a comienzos de los años 90, de unos 60 millones de anzuelos en los años 80. El esfuerzo de pesca en los años 90 se concentró principalmente en el Atlántico sudeste, donde se encuentra el caladero más importante de patudo de la pesquería de palangre de Japón. La captura japonesa de aguja blanca ha supuesto aproximadamente el 5% de la captura atlántica total, y fluctuó en torno a 100 toneladas métricas. La captura japonesa de aguja azul supuso aproximadamente el 20% en el Atlántico norte y el 40-60% en el Atlántico sur, y fluctuó en torno a 1.000-1.500 toneladas métricas en el Atlántico total. La captura de pez vela y aguja picada supuso menos del 5% de la captura del Atlántico total. La cantidad de captura de pez vela ha sido similar a la de aguja picada en 1994 y 1995, si bien la captura de 1995 es preliminar.*

## 1. INTRODUCTION

The Japanese longline fishery began in the Atlantic Ocean in 1956 in western equatorial waters. The fishing grounds expanded throughout the tropical regions in the mid-1960s. In the 1970s, the Japanese longline fishery changed the strategy on target species from albacore to bigeye, bluefin, and southern bluefin tunas with the development of super-cold freezers. As a consequence of the change in targeting, the fishing grounds and gear configuration changed very quickly in the 1970s. Effort has been concentrated in a few restricted areas, such as off Nova Scotia, Morocco/Sahara, Angola, and South Africa. In the 1980s, the distribution pattern of fishing effort was stable in these four major fishing grounds. The detailed description of these historical changes was presented by Uozumi and Nakano (1994). In this paper, the recent status of the Japanese longline fishery in the 1990s is described. The data for 1995 are still preliminary.

<sup>1</sup> National Research Institute of Far Seas Fisheries, 5-7-1 Orido Shimizu, Japan 424

## 2. RESULTS

### 2.1 Fishing effort

Total fishing effort in number of hooks used for the Japanese longline fishery in the Atlantic Ocean fluctuated at around 60 million hooks in the 1980s (Figure 1). It increased to about 90 million hooks in the beginning of the 1990s, and fluctuated around this level until 1994, except for a higher number of hooks in 1995. Before the mid 1980s, the amount of fishing effort in both the north and south Atlantic was similar, but the effort in the south Atlantic has become greater than in the north Atlantic since the mid 1980s. This tendency became clearer in the 1990s. The fishing effort in the east Atlantic Ocean has dominated that in the west Atlantic since the early 1970s and this trend has become clearer in the 1990s. In the 1990s, the effort in the west Atlantic continued to decrease gradually, but it has increased in the east Atlantic.

Figure 2 shows the geographical distribution of fishing effort from 1991 to 1994. The general distribution pattern of fishing effort is similar to that in the 1980s. The fishing effort has been concentrated in a few restricted areas. These areas are the waters from off the east coast of Canada to off the Straits of Gibraltar, which are the fishing grounds for bluefin tuna; the waters off the west coast of Africa, between 20° N and 20° S, which are the fishing grounds for bigeye tuna, and the waters off South Africa, which are the fishing grounds for southern bluefin tuna. This distribution pattern (Figure 2) has been stable for the four years shown.

### 2.2 Catch and CPUE

#### 2.2.1 *White marlin*

The catch of white marlin by the Japanese longline fishery is shown in Table 1. Japanese catch of white marlin has been stable since the 1970s and decreased to about 50 MT for north and south Atlantic (Table 1). The percentage of the Japanese catch has been 10-30% in the north Atlantic and 5-10% in the south Atlantic. The distribution of catch in the 1990s is shown in Figure 3 (left). Almost all the catch of this species is from the central tropical Atlantic, although the highest CPUEs were obtained in the coastal waters of South America (Figure 3 - right). The distribution pattern of CPUE in the 1990s is very similar to that of the 1960s when the fishing effort was widely distributed over the Atlantic (Uozumi and Nakano 1994). White marlin is caught as by-catch, which is reflected in the discrepancy between the distributions of CPUE and fishing effort.

#### 2.2.2 *Blue marlin*

The catch of blue marlin by the Japanese longline fishery is shown in Table 2. Japanese catch of blue marlin in the north Atlantic has fluctuated between about 100 and 600 MT in the 1980s and 1990s with no clear trend (Table 2). The percentage of the Japanese catch has fluctuated 10-25% in the north Atlantic without any clear trend in recent years. The catch in the south Atlantic in the 1990s ranged from about 800 to 1,000 MT, higher than the approximately 500 MT in the 1980s. The percentage of the Japanese catch reached about 40-60% in the south Atlantic. The distribution of catches in the 1990s is shown in Figure 4 (left). Almost all the catch of this species is from the central tropical Atlantic, a pattern very similar to that of the 1980s. The high CPUEs were obtained widely across the tropical Atlantic, but the CPUE on the western side was higher than that on the eastern side.

#### 2.2.3 *Sailfish and longbill spearfish*

The reported catch statistics for sailfish and longbill spearfish were combined until 1993. The new reporting format requiring the separated catches for sailfish was introduced in 1992. The first two years, the coverage ratio using the new format was not high enough for species specific analysis, because many vessels reported in the old format. Since 1994, the coverage ratio using the new format increased significantly and it became possible to analyze the species separately. Therefore, the historical catch up to 1995 is shown as species combined in Table 3, and the catch separated by species in 1994 and 1995 are shown in Tables 4 and 5 respectively.

The species combined catch by Japan in the 1990s from the eastern Atlantic fluctuated between about 20 and 100 MT with the catch on the western side being minor, between 1 and 73 MT. Tables 4 and 5 suggest the average percentage of sailfish in the species combined catch for 1994-1995 was around 50% over both sides of the Atlantic.

The distributions of the catch and CPUE for the two species are shown in Figures 5 and 6. The majority of the catch of the two species was obtained from the tropical Atlantic Ocean. There is a clear difference in the distribution pattern of catch between the two species i.e. the catch of sailfish was obtained from the more coastal waters, off central Africa, than spearfish. A clear difference was also shown in the distribution pattern of CPUE. The high CPUEs of sailfish were obtained from the coastal waters off both Africa and South America, but those of spearfish were obtained from

relatively offshore and southern waters. There was no significant difference in species composition for these two species between the period of 1956-70 when the species specific data were obtained from research cruises, and 1993 when the new log-sheet was introduced (Uozumi, 1994). There was no clear difference in the distribution pattern between 1993 and 1994-95. These results may suggest that there is no clear large-scale change in the species composition for the two species.

### 3. LITERATURE CITED

UOZUMI, Y. and H. Nakano 1994: A historical review of Japanese longline fishery and billfish catches in the Atlantic Ocean. *Inter. Comm. Conser. Atl. Tunas, Coll. Vol. Sci. Pap.* XLI: 233-243.

UOZUMI, Y. 1994. Preliminary analysis on the distribution of sailfish and longbill spearfish in the Atlantic Ocean in 1993 based on the logbook data. *Inter. Comm. Conser. Atl. Tunas, Coll. Vol. Sci. Pap.* XLIV(3): 26-29.

**Table 1. Catch (mt) white marlin in the Atlantic Ocean. “%” denotes the percentage of the Japanese longline catch in the total Atlantic catch. The Japanese catch in 1995 is preliminary.**

Year	North			South		
	All Countries	JAPAN	%	All Countries	JAPAN	%
1965	2,127	1,913	89.9	2,779	2,718	97.8
1966	1,798	1,417	78.8	1,714	1,585	92.5
1967	588	174	29.6	838	494	58.9
1968	692	273	39.5	1,355	815	60.1
1969	1,212	451	37.2	1,042	392	37.6
1970	1,048	419	40.0	1,049	284	27.1
1971	1,547	915	59.1	713	65	9.1
1972	1,208	339	28.1	1,072	101	9.4
1973	995	328	33.0	797	27	3.4
1974	1,218	381	31.3	532	9	1.7
1975	1,088	404	37.1	489	14	2.9
1976	1,052	540	51.3	767	3	0.4
1977	501	80	16.0	624	26	4.2
1978	428	27	6.3	521	14	2.7
1979	481	42	8.7	534	15	2.8
1980	508	99	19.5	447	7	1.6
1981	780	118	15.1	341	25	7.3
1982	653	84	12.9	438	27	6.2
1983	1,382	27	2.0	312	17	5.4
1984	702	52	7.4	387	24	6.2
1985	842	45	5.3	689	81	11.8
1986	928	56	6.0	702	73	10.4
1987	583	60	10.3	883	74	8.4
1988	386	68	17.6	864	76	8.8
1989	258	73	28.3	1,378	73	5.3
1990	295	34	11.5	740	92	12.4
1991	291	45	15.5	1,474	77	5.2
1992	513	180	35.1	958	68	7.1
1993	400	33	8.3	965	49	5.1
1994	663	34	5.1	981	57	5.8
1995	-	31	-	-	40	-

**Table 2. Catch (mt) of blue marlin in the Atlantic Ocean. % denotes the percentage of the Japanese longline catch in the total Atlantic catch. The Japanese catch in 1995 is preliminary.**

Year	North			South		
	All Countries	JAPAN	%	All Countries	JAPAN	%
1965	3,682	3,330	90.4	2,473	2,421	97.9
1966	2,040	1,677	82.2	1,819	1,693	93.1
1967	1,173	485	41.3	1,067	588	55.1
1968	1,344	474	35.3	1,090	472	43.3
1969	1,601	658	41.1	1,490	302	20.3
1970	1,845	758	41.1	1,019	247	24.2
1971	2,115	1,223	57.8	1,079	172	15.9
1972	1,315	335	25.5	1,051	85	8.1
1973	1,616	229	14.2	1,561	117	7.5
1974	1,916	267	13.9	1,100	17	1.5
1975	2,076	551	26.5	1,109	57	5.1
1976	1,366	260	19.0	944	4	0.4
1977	1,255	118	9.4	792	17	2.1
1978	976	54	5.5	530	15	2.8
1979	880	68	7.7	504	66	13.1
1980	1,064	193	18.1	553	115	20.8
1981	1,248	332	26.6	459	136	29.6
1982	1,615	637	39.4	854	495	58.0
1983	1,149	192	16.7	507	248	48.9
1984	1,204	351	29.2	923	482	52.2
1985	1,305	409	31.3	1,289	691	53.6
1986	1,058	174	16.4	796	335	42.1
1987	662	78	11.8	1,109	362	32.6
1988	800	206	25.8	1,457	617	42.3
1989	1,300	593	45.6	2,129	962	45.2
1990	1,230	250	20.3	1,963	967	49.3
1991	1,199	145	12.1	1,797	755	42.0
1992	1,189	193	16.2	1,821	824	45.2
1993	1,283	207	16.1	1,676	719	42.9
1994	1,334	337	25.3	1,896	1,165	61.4
1995	-	479	-	-	1,072	-

**Table 3. Catch (mt) of sailfish and spearfish in the Atlantic Ocean. % denotes the percentage of the Japanese longline catch in the total Atlantic catch. The Japanese catch in 1995 is preliminary.**

Year	East			West		
	All Countries	JAPAN	%	All Countries	JAPAN	%
1965	1,334	1,331	99.8	1,470	1,140	77.6
1966	1,242	1,237	99.6	920	608	66.1
1967	571	404	70.8	727	274	37.7
1968	1,145	548	47.9	862	422	49.0
1969	739	230	31.1	759	228	30.0
1970	580	95	16.4	1,319	499	37.8
1971	860	125	14.5	1,127	321	28.5
1972	1,035	89	8.6	575	132	23.0
1973	717	66	9.2	581	78	13.4
1974	311	19	6.1	646	118	18.3
1975	227	38	16.7	568	112	19.7
1976	363	4	1.1	813	133	16.4
1977	894	24	2.7	758	23	3.0
1978	1,775	11	0.6	727	9	1.2
1979	2,391	19	0.8	731	20	2.7
1980	1,549	33	2.1	691	22	3.2
1981	1,070	50	4.7	630	44	7.0
1982	845	38	4.5	914	135	14.8
1983	2,918	47	1.6	747	22	2.9
1984	2,105	63	3.0	1,016	34	3.3
1985	1,951	84	4.3	974	38	3.9
1986	1,700	71	4.2	1,063	28	2.6
1987	2,153	37	1.7	1,034	6	0.6
1988	1,621	57	3.5	834	22	2.6
1989	1,247	57	4.6	739	22	3.0
1990	1,720	63	3.7	781	25	3.2
1991	1,290	16	1.2	840	73	8.7
1992	1,567	42	2.7	972	1	0.1
1993	2,181	58	2.7	1,115	2	0.2
1994	1,829	85	4.6	753	4	0.5
1995	-	102	-	-	9	-

**Table 4. Catch (mt) of sailfish by the Japanese longline fishery in 1994-95. The value in 1995 is preliminary .**

	East	West	Total
1994	50	2	52
1995	47	3	50

**Table 5. Catch (mt) of longbill spearfish by the Japanese longline fishery in 1994-95. The value in 1995 is preliminary .**

	East	West	Total
1994	35	2	37
1995	55	6	61

**Figure 1. Historical changes of the Japanese longline effort in the Atlantic Ocean from 1956 to 1995. The values in 1995 are preliminary.**

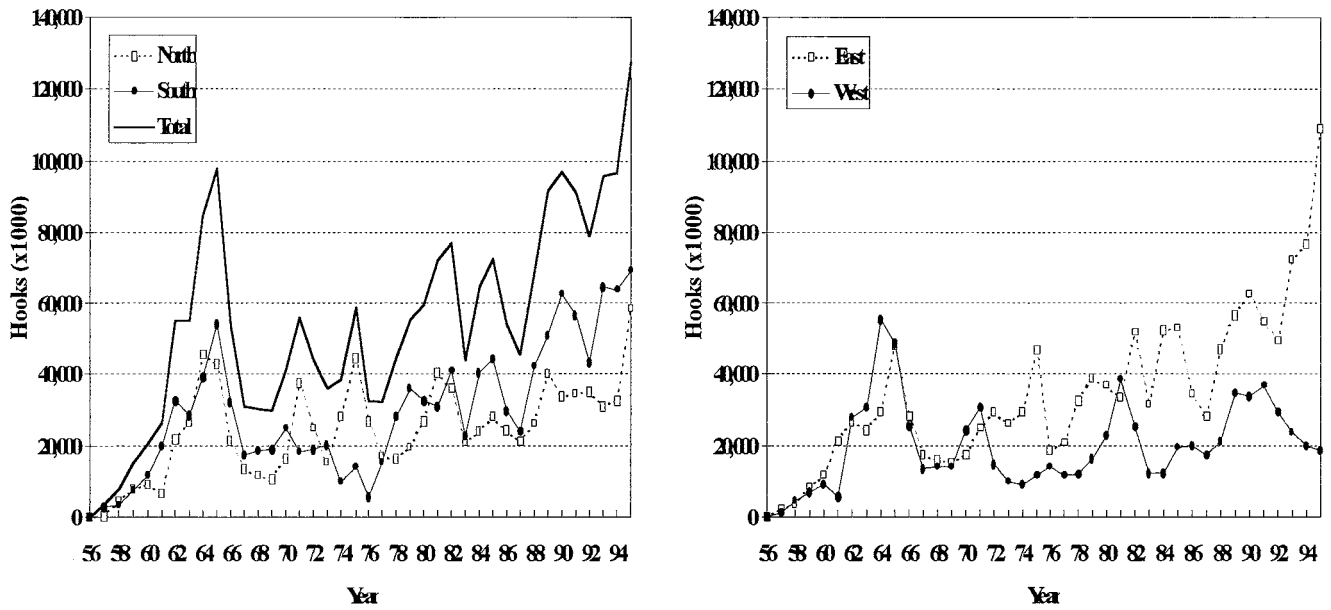


Fig. 1. Historical changes of the Japanese longline effort in the Atlantic Ocean from 1956 to 1995. The values in 1995 are preliminary.

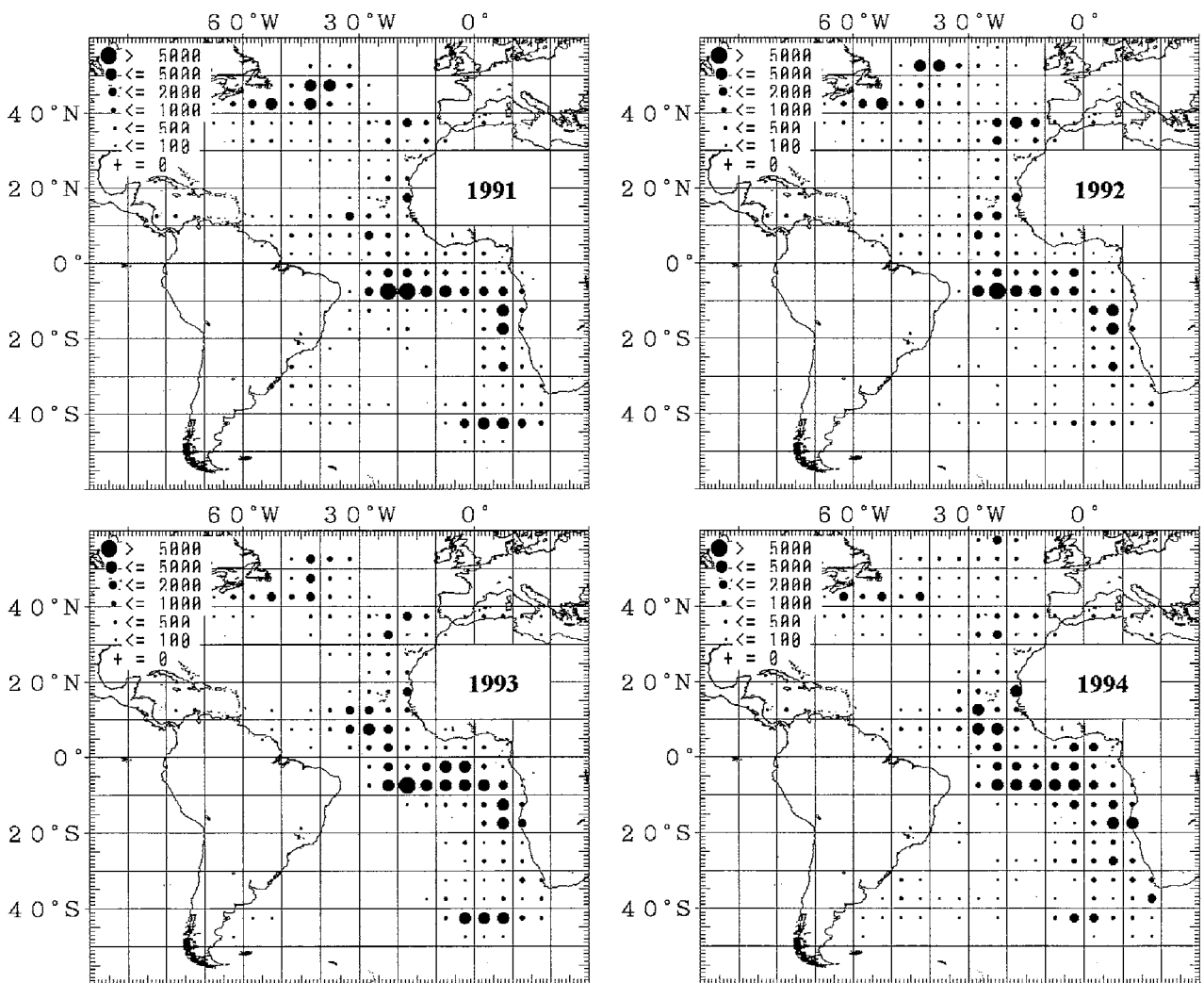


Fig. 2. Distribution of fishing effort (number of hooks in thousands) for the Japanese longline fishery in the Atlantic Ocean from 1991 to 1994.

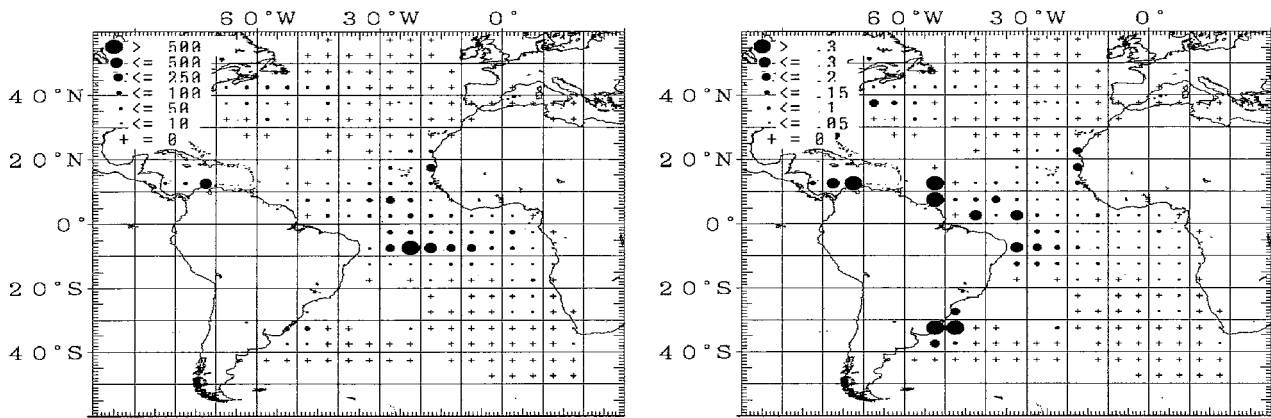


Fig. 3. Distribution of average annual catch of white marlin in thousand fish (left) and CPUE in number per 1000 hooks (right) in the 1990s (1990-1995).

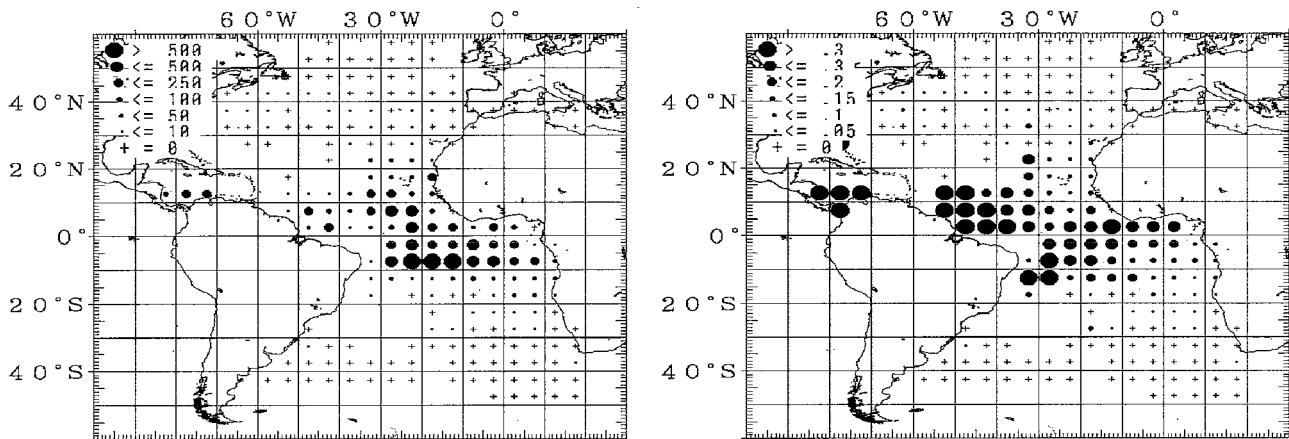


Fig. 4. Distribution of average annual catch of blue marlin in thousand fish (left) and CPUE in number per 1000 hooks (right) in the 1990s (1990-1995).

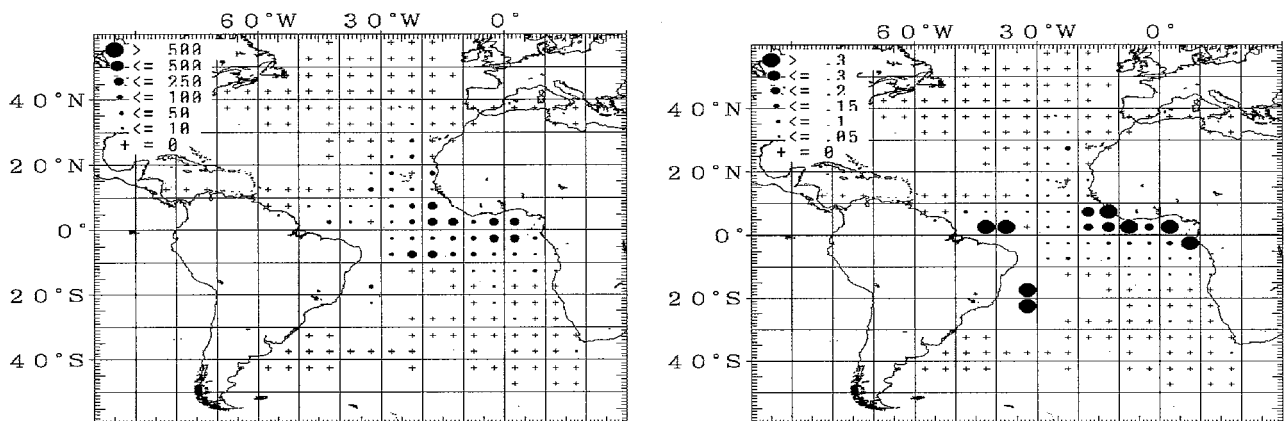


Fig. 5. Distribution of average annual catch of sailfish in thousand fish (left) and CPUE in number per 1000 hooks (right) during 1994-1995.

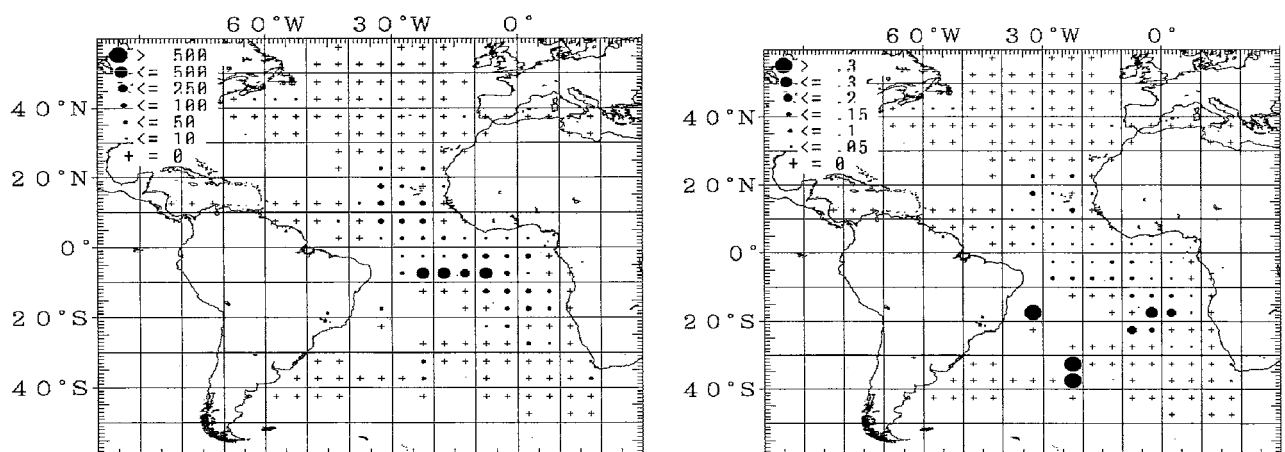


Fig. 6. Distribution of average annual catch of longbill spearfish in thousand fish (left) and CPUE in number per 1000 hooks (right) during 1994-1995.