

BLUEFIN FISHERY IN PORTUGUESE EXCLUSIVE ECONOMIC ZONE

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SUMMARY

This paper provides information on catches and fishing effort of bluefin caught in the Portuguese Exclusive Economic Zone and on some biological characteristics of the species.

RESUME

Le présent document fournit une information sur les prises et l'effort concernant le thon rouge capturé dans la zone économique exclusive du Portugal, ainsi que sur certaines caractéristiques biologiques de l'espèce.

RESUMEN

Este documento facilita información acerca de capturas y esfuerzo de pesca sobre el atún rojo pescado en la Zona Económica Exclusiva y acerca de algunas características biológicas de la especie.

1 - INTRODUCTION

Bluefin (Thunnus thynnus t.) in Portuguese EEZ is mainly caught by Japanese longline vessels licenced to fish in Continental and Madeira Islands waters. No licences have recently been conceded for Azores waters.

Portugal so far does not have a bluefin target-specie fishery ever since 1972.

The operating area of Japanese longline in Portuguese EEZ is N and E in Madeira waters and S-SW in the Continent. The fishing season starts in March and goes on until July. April and May are the months of highest nominal fishing effort.

2 - CATCH, EFFORT AND CPUE OF LONGLINE FISHERY

In the last ten years both the total catch and fishing effort of tuna caught by longline in Portuguese EEZ decreased from 5000 tons and 2400 fishing days in 1974 to 450 tons and 540 fishing days in 1984. The average cpue of this fishery during the period concerned is around 1,2 ton/fishing day (Table 1). The absence of fishing activities in 1979 is due to the establishment of the Agreement in Fisheries between Portugal and Japan.

Bluefin accounts for most of the catch of the Japanese fleet in Portuguese waters nevertheless bigeye (Thunnus obesus) also

represents a high percentage of the total catch. Swordfish (*Xiphias gladius*) and albacore (*Thunnus alafunga*) are a by-catch of this fishery (Table 2).

The catch, effort and cpue of longline fishery by areas of 1°x1° are available in Portugal since 1982 (catch and effort data is periodically sent by telex by Japanese vessels). These data are shown in figures 1 to 14, biweekly, for 1982, 1983 and 1984.

Figures 1-A to 14-A show catch (tons) and number of hooks. Figures 1-B to 14-B represent the cpue (tons/1000 hooks).

These figures suggest that:

- Japanese vessels start operating at Madeira waters in March or April moving afterwards to the Continent, where they stay during May.
- In Continental waters (for the period 1982-84 only) the highest cpue's were recorded during 1982 and coincided with a shrinking of the fishing area, when comparing with other years.
- In Madeira there was an increase in fishing effort during the 2nd biweek of April/83 (Figure 6) and the fishing area was enlarged. This was also the period of biggest cpue's.

Tables 3, 4 and 5 represent a summary of the differences existing in the fishing area, nominal effort and cpue, between April and May of each year (1982-84).

3 - SOME BIOLOGICAL CHARACTERISTICS OF THE BLUEFIN CAUGHT

The above referred Japanese longline fishing, as well as the old Portuguese trap fishery, catches giant ripe bluefin migrating eastward in the Ibero-Moroccan Bay to enter Mediterranean sea for spawning.

Sampling for biological characteristics of this fish occurs sporadically through the embarkment of Portuguese technicians

on Japanese vessels. Figure 15 shows the length distribution of 88 bluefin sampled on board (GOMES, 1981) in April, 1981 in the south Continental waters. Most bluefin are over 190cm and 100 kg, the so-called giants (RIVAS, 1978).

Sex ratio was determined for 86 fishes in the same month:

	n°s	%
Males	41	47,7
Females	45	52,3
TOTAL	86	100

Average weights of bluefin caught in Continental and Madeira waters during 1982 and 1983 were calculated from reports periodically sent by telex by Japanese vessels:

	Continent	Madeira
1982	159 kg	120 kg
1983	158 kg	124 kg

Bluefin caught by longline in Continental waters (April, May) - closer to Gibraltar than those caught in Madeira - seems significantly bigger than those from Madeira (March, April). Bluefin stomachs were usually found empty or with pelagic crabs (*Polybius henslowi*) seldom with fish.

REFERENCES

- GOMES, M.C. (1981) - Relatório da estadia a bordo do atunheiro japonês "Sumiyoshi maru" n°55, Relatório Interno, INIP (6), pp.9
- RIVAS, L.R. (1978) - Preliminary models of annual life history cycles of the north atlantic bluefin tuna in: The Physiological Ecology of Tunas, ed. by G. Sharp and A. Dizon, Academic Press, New York

	1974	75	76	77	78	79	80	81	82	83	84*
CATCH (ton.)	5 000	2 900	1 400	1 500	500	-	280	240	500	450	270
Fishing days	2 400	3 100	1 000	1 000	400	-	280	340	350	540	510
cpue (ton/fishing day)	2.1	0.9	1.4	1.6	1.2	-	1.0	0.7	1.4	0.8	0.5

* estimated

TABLE 1 - Japanese longline catches, fishing days and cpue in Portuguese waters from 1974 to 1984.

YEAR	Catch % (EEZ) by species						
	BFT	BET	YFT	ALB	SWO	BIL	OTH
1975	53	34	0.1	3.3	7	0.4	3
1976	90	7		0.4	2		0.9
1977	76	20		0.2	2		2
1978	68	24	0.2	0.2	6		2
1980	53	35		0.1	7		5
1981	45	43		0.1	11		1
1982	96	3		0.1	0.8		0.6
1983	44	49		0.1	5		2
1984	72	14	0.01	0.01	12		2

TABLE 2 - Percentage of the species caught by Japanese longline fleet from 1975 to 1984.

		1982		
Month		fishing area	fishing effort	cpue
CONT	April	-	-	-
	May	-	+	+
MAD	April	+	+	+
	May	0	0	0

TABLE 3 - Differences between the fishing area, fishing effort and cpue, April and May/82, in the Continent (CONT) and Madeira waters (MAD).

		1983		
Month		fishing area	fishing effort	cpue
CONT	April	+	+	-
	May	-	-	+
MAD	April	+	+	+
	May	-	-	-

TABLE 4 - Differences between the fishing area, fishing effort and cpue, April and May/83, in the Continent (CONT) and Madeira waters (MAD).

+ : month of highest value or largest area
 - : " " lowest value or shorter area
 = : equal value or area
 0 : no fishing

		1984		
Month		fishing area	fishing effort	cpue
CONT.	April	+	+	+
	May	-	-	-
MAD.	April	+	+	+
	May	0	0	0

TABLE 5 - Differences between the fishing area, fishing effort and cpue, April and May/84, in the Continent (CONT) and Madeira waters (MAD).

+ : month of highest value or largest area
 - : " " lowest value or shorter area
 = : equal value or area
 0 : no fishing

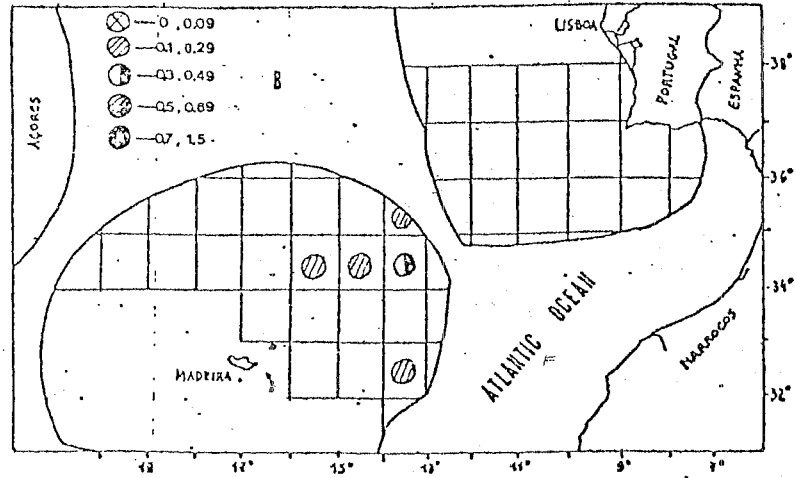
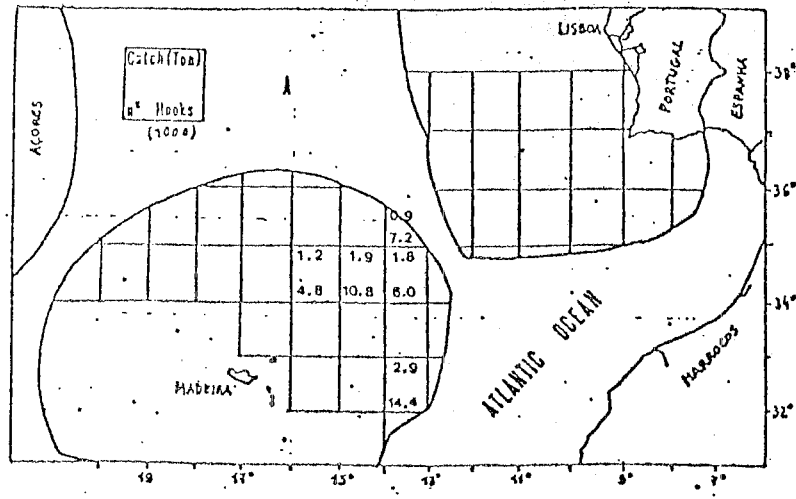


Figure 1 - 1st biweek of April/82

A - Japanese longline total catch and effort (1 000 hooks) by area (1°x1°).

B - cpue (ton/1 000 hooks) by area (1°x1°).

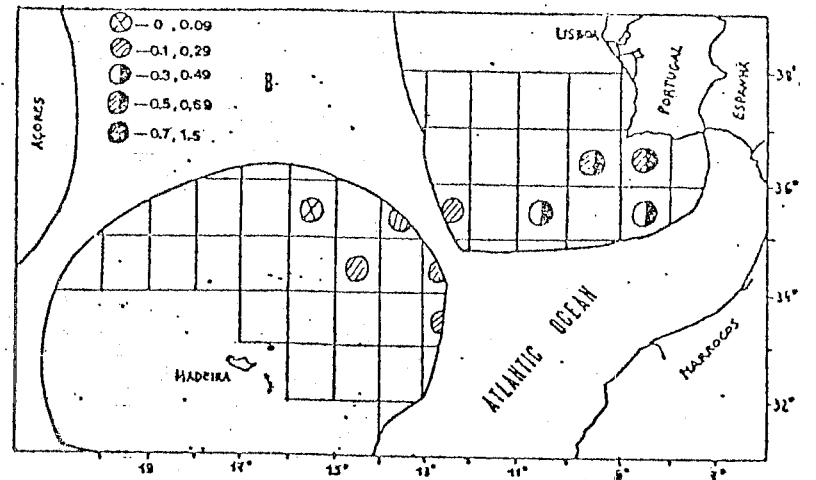
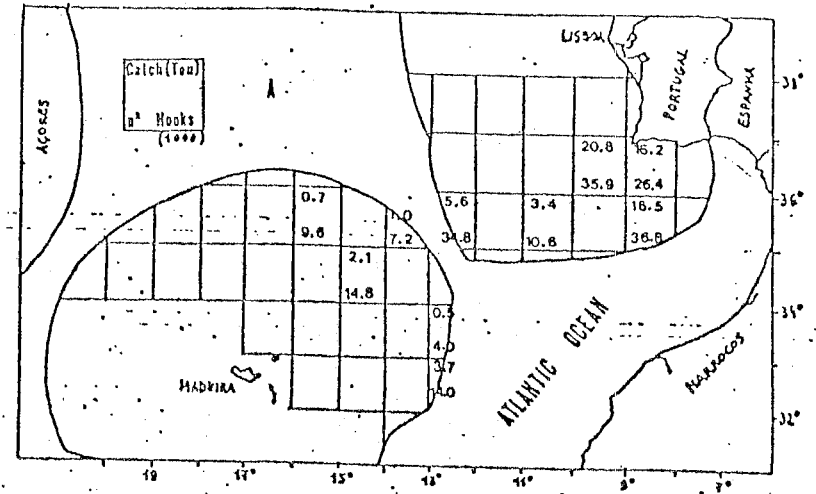


Figure 2 - 2nd biweek of April/82

A - Japanese longline total catch and effort (1 000 hooks) by area (1°x1°).

B - cpue (ton/1 000 hooks) by area (1°x1°).

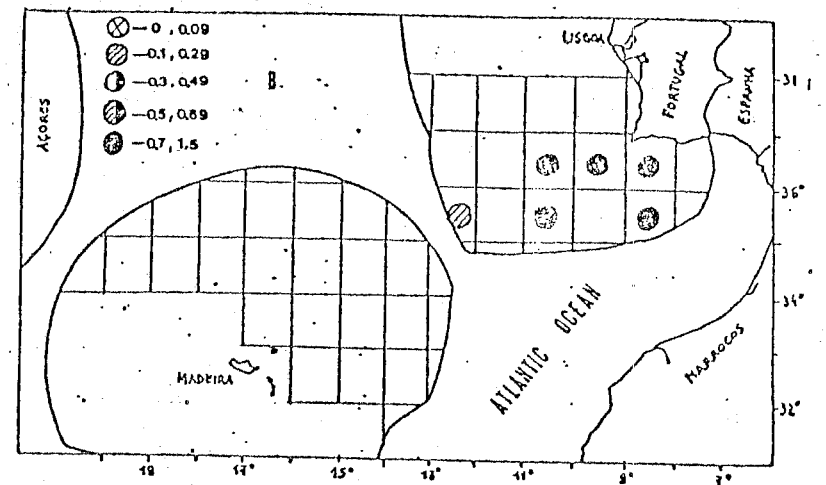
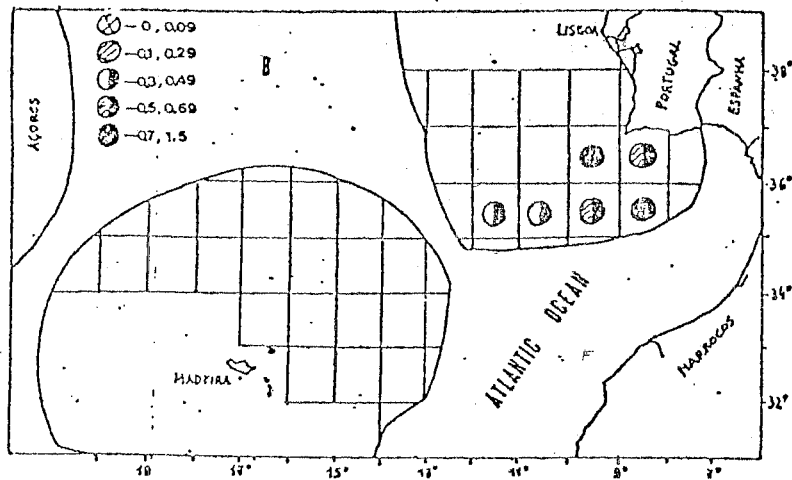
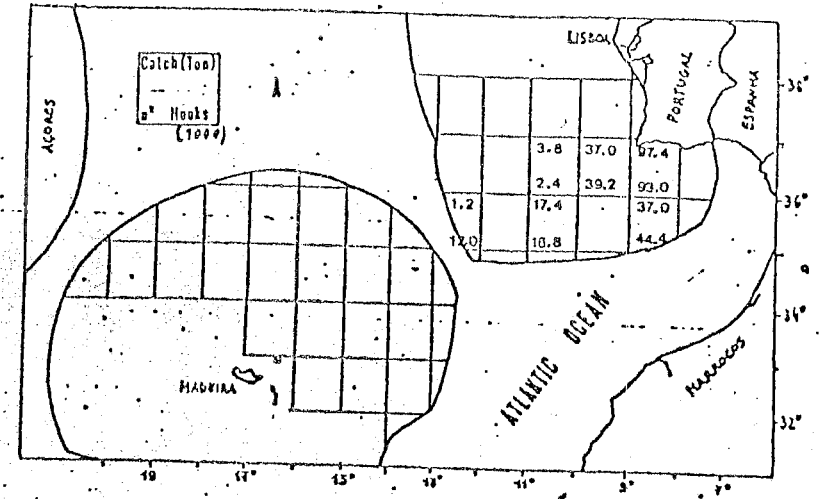
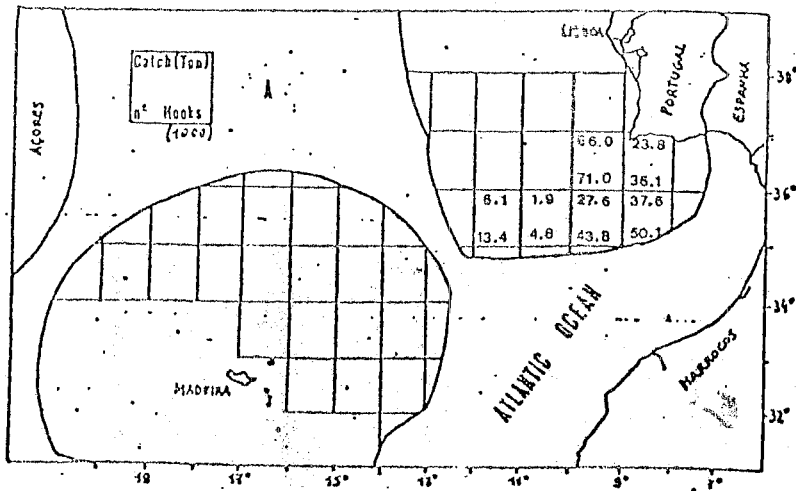


Figure 3 - 1st biweek of May/82

Figure 4 - 2nd biweek of May/82

A - Japanese longline total catch and effort (1 000 hooks) by area (1°x1°).

B - cpue (ton/1 000 hooks) by area (1°x1°).

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B - cpue (ton/1 000 hooks) by area (1°x1°).

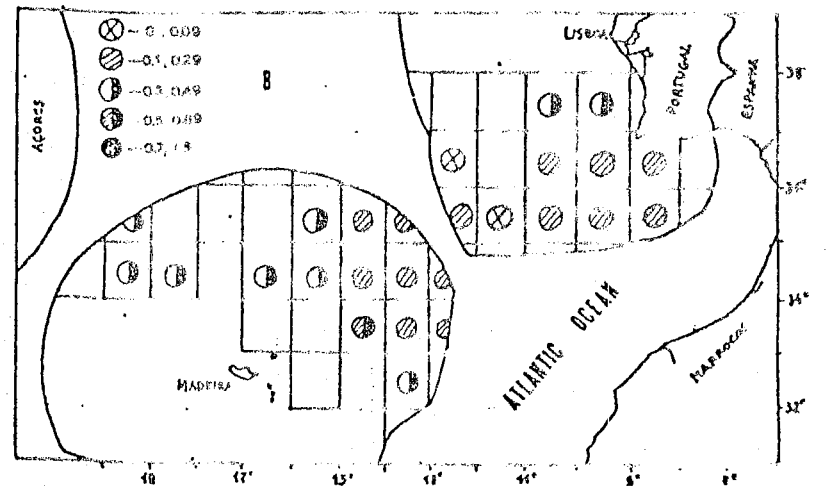
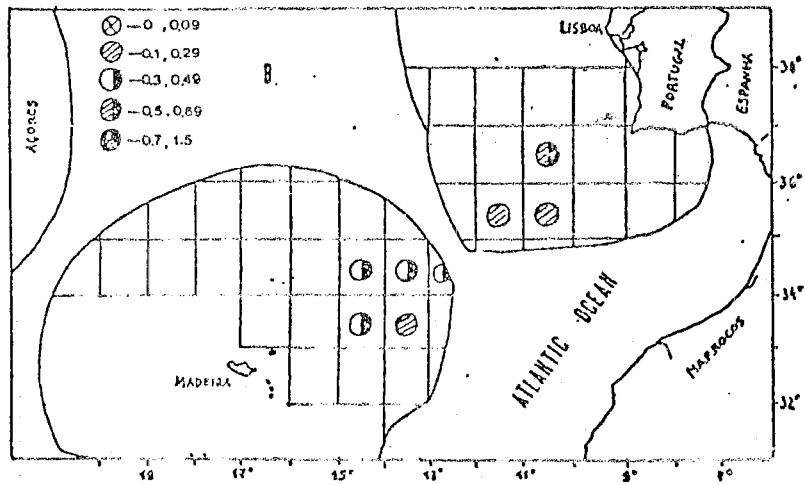
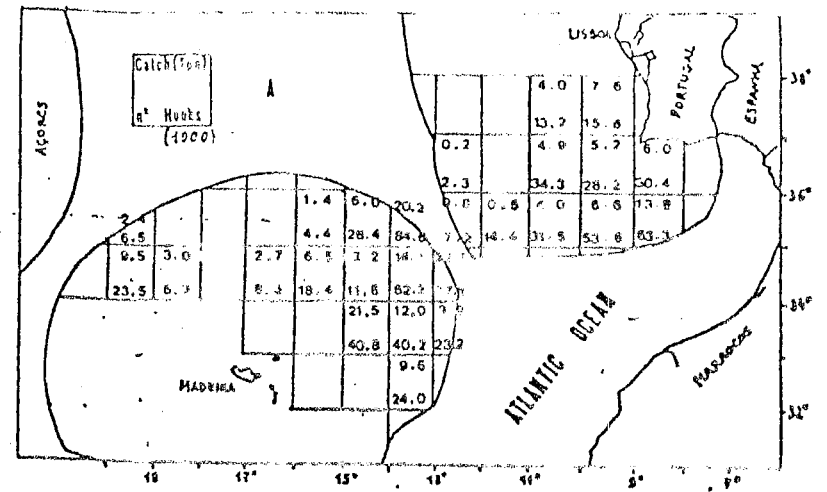
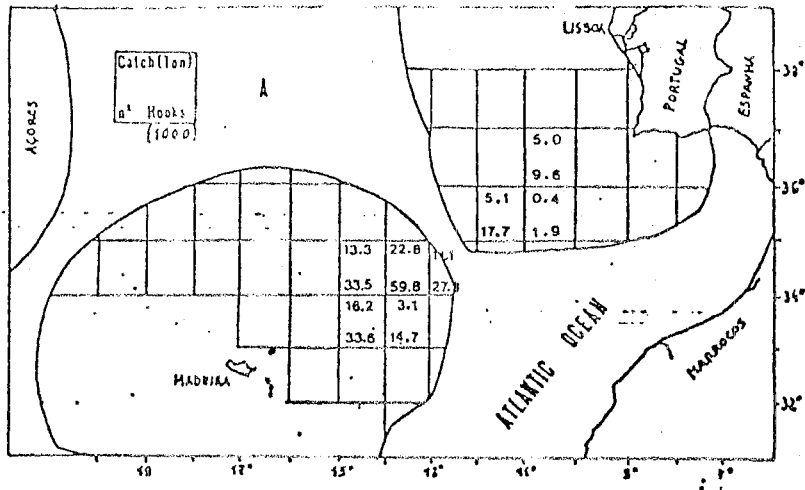


Figure 5 - 1st biweek of April/83

Figure 6 - 2nd biweek of April/83

A - Japanese longline total catch and effort (1 000 hooks) by area (1°x1°).

B - cpue (ton/1 000 hooks) by area (1°x1°).

A - Japanese longline total catch and effort (1 000 hooks) by area (1°x1°).

B - cpue (ton/1 000 hooks) by area (1°x1°).

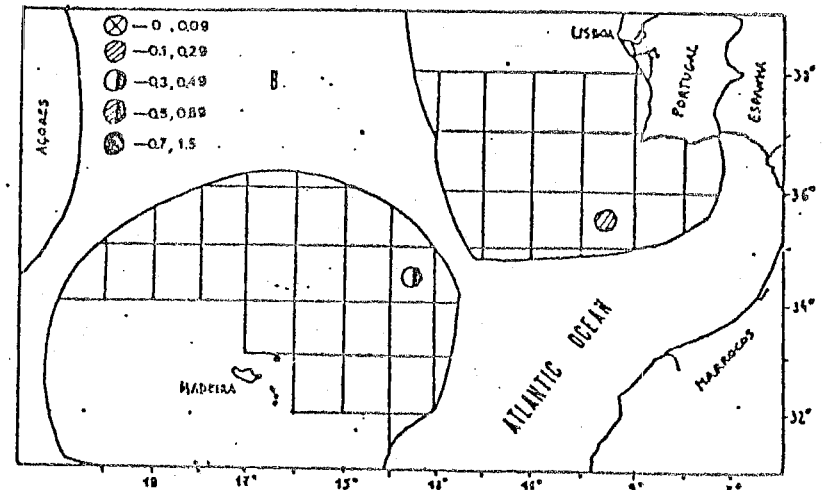
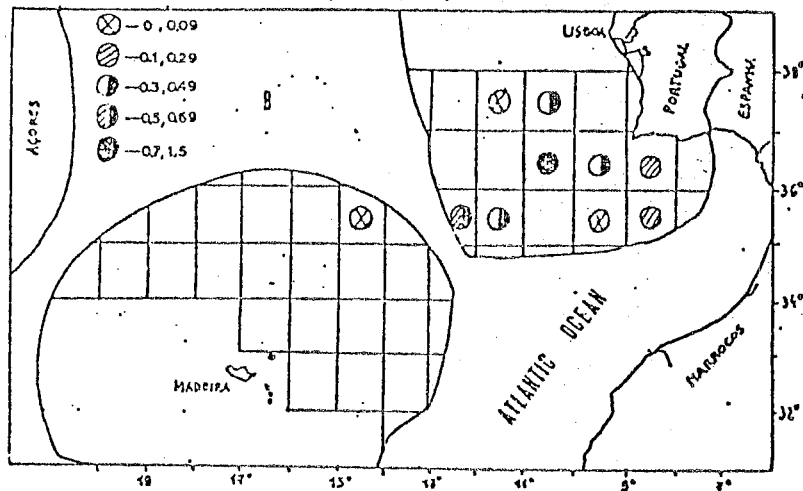
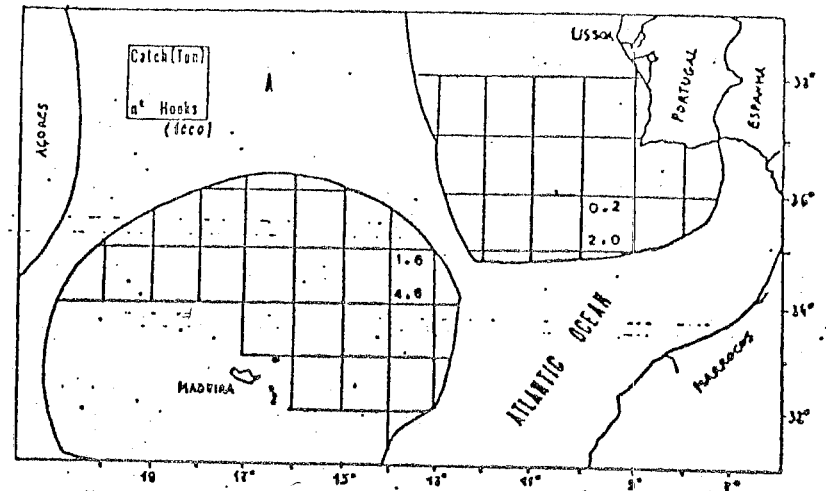
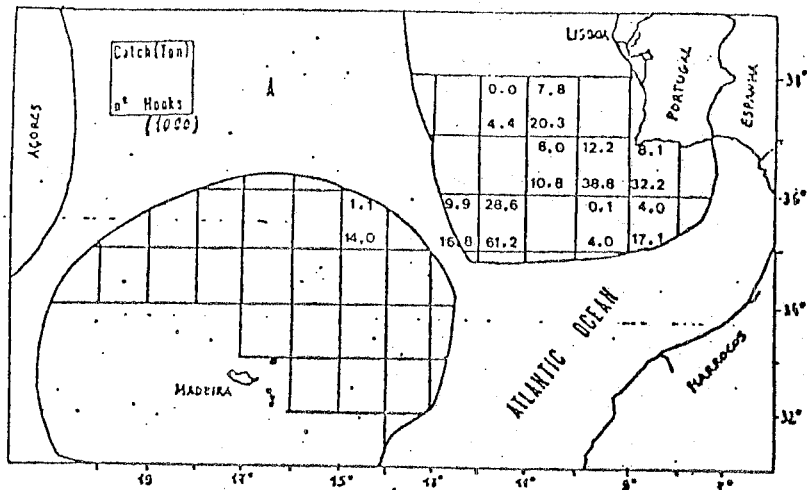


Figure 7 - 1st biweek of May/83

Figure 8 - 2nd biweek of May/83.

A - Japanese longline total catch and effort (1 000 hooks) by area (1°x1°).

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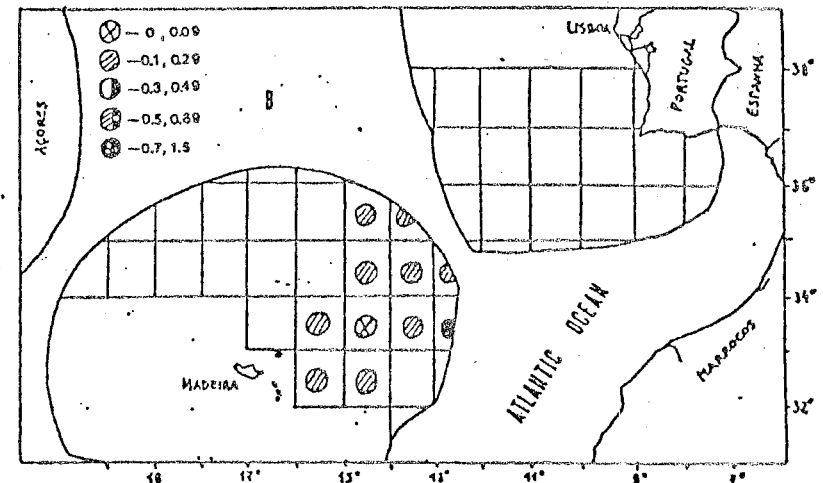
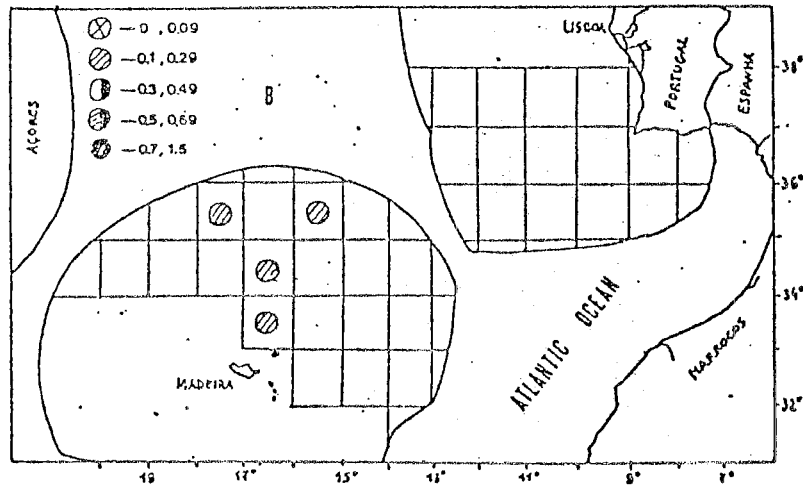
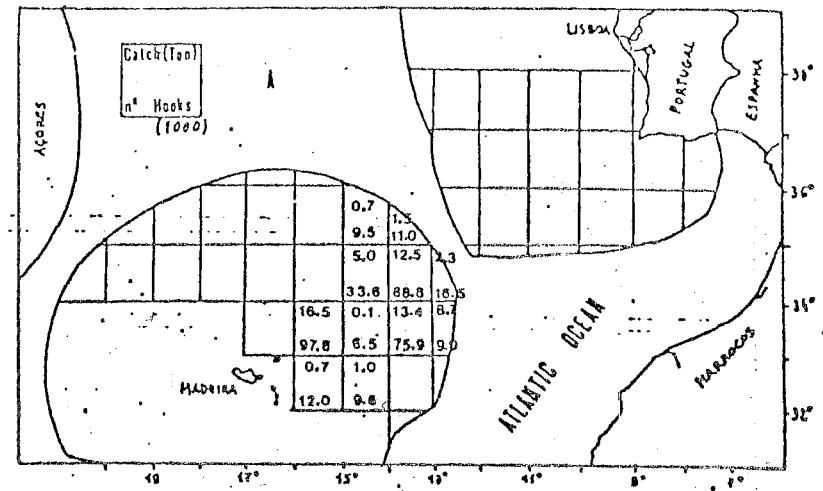
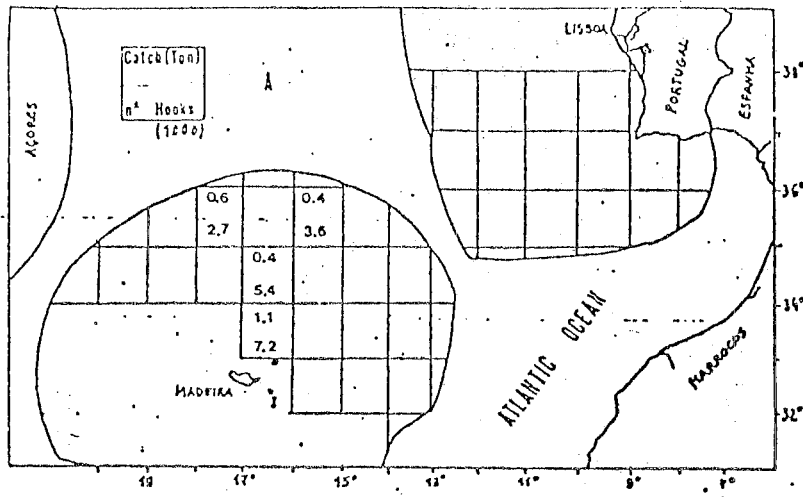


Figure 9 - 1st biweek of March/84.

Figure 10 - 2nd biweek of March/84.

A - Japanese longline total catch and effort (1 000 hooks) by area (1°x1°).

B - cpue (ton/1 000 hooks) by area (1°x1°).

A - Japanese longline total catch and effort (1 000 hooks) by area (1°x1°).

B - cpue (ton/1 000 hooks) by area (1°x1°).

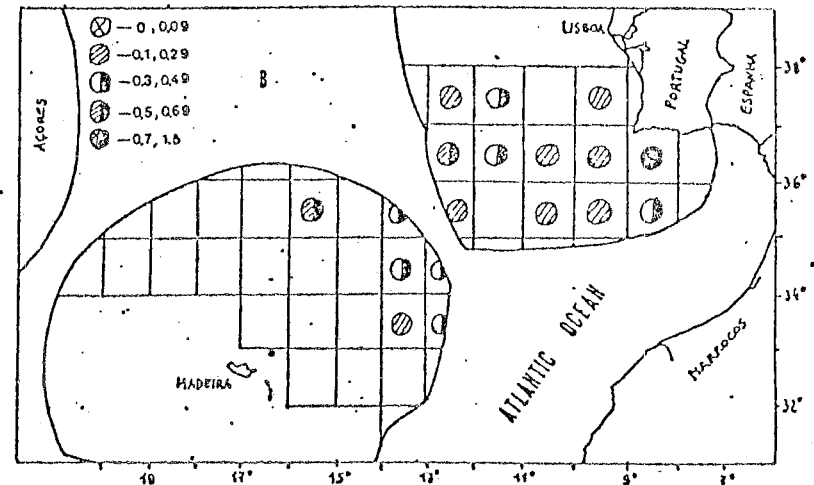
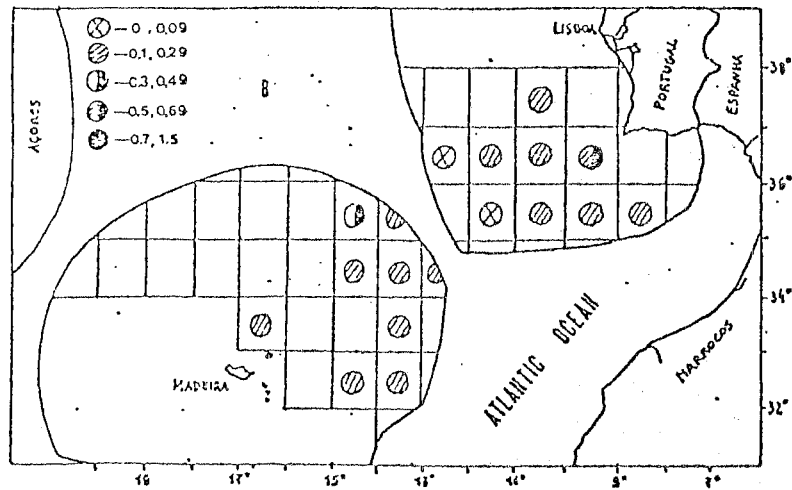
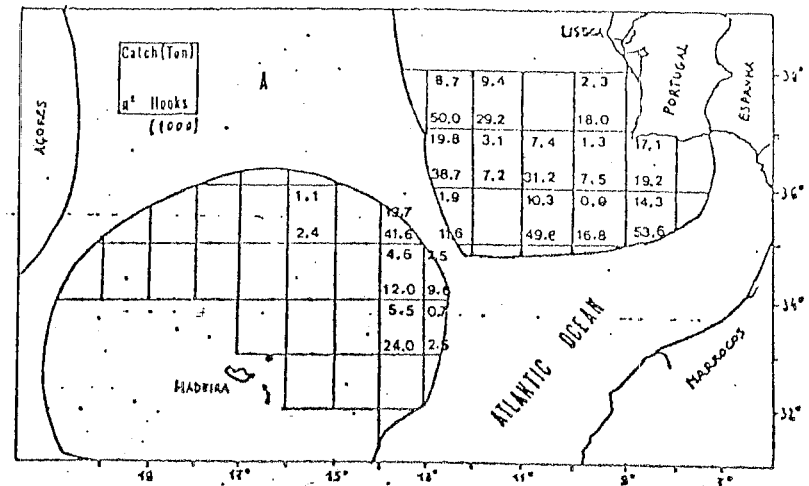
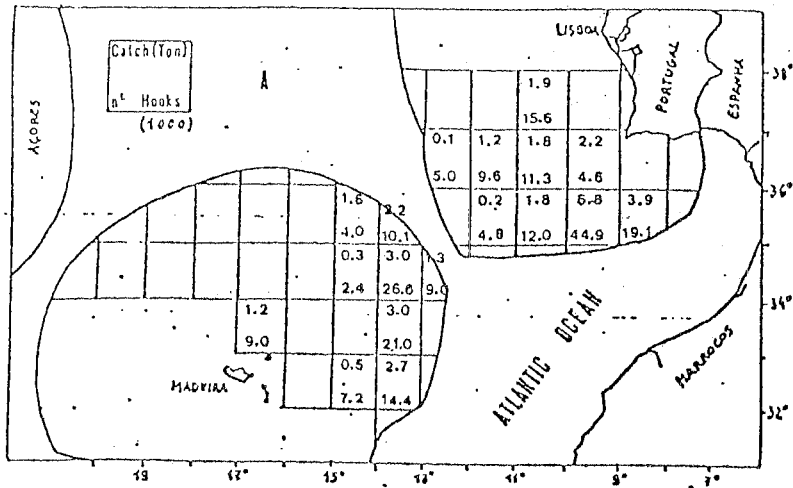


Figure 11 - 1st biweek of April/84.

Figure 12 - 2nd biweek of April/84.

A - Japanese longline total catch and effort (1 000 hooks) by area (1°x1°).

A - Japanese longline total catch and effort (1 000 hooks) by area (1°x1°).

B - cpue (ton/1 000 hooks) by area (1°x1°).

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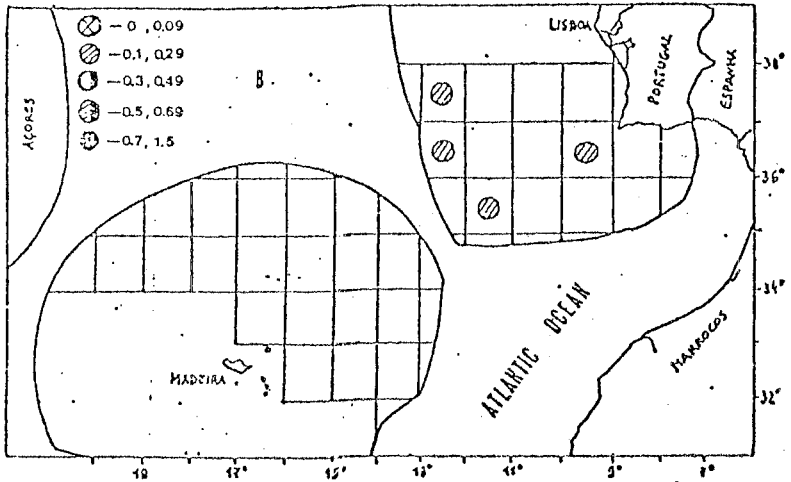
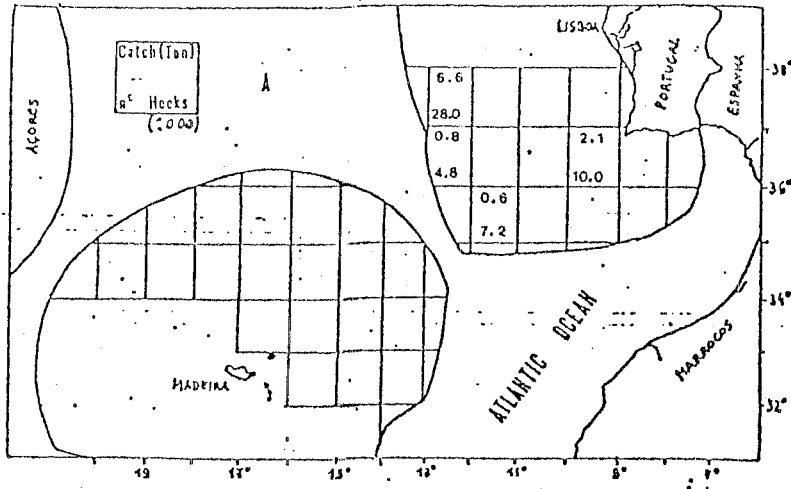


Figure 13 - 1st biweek of May/84.

A - Japanese longline total catch and effort (1 000 hooks) by area (1°x1°)..

B - cpue (ton/1 000 hooks) by area (1°x1°).

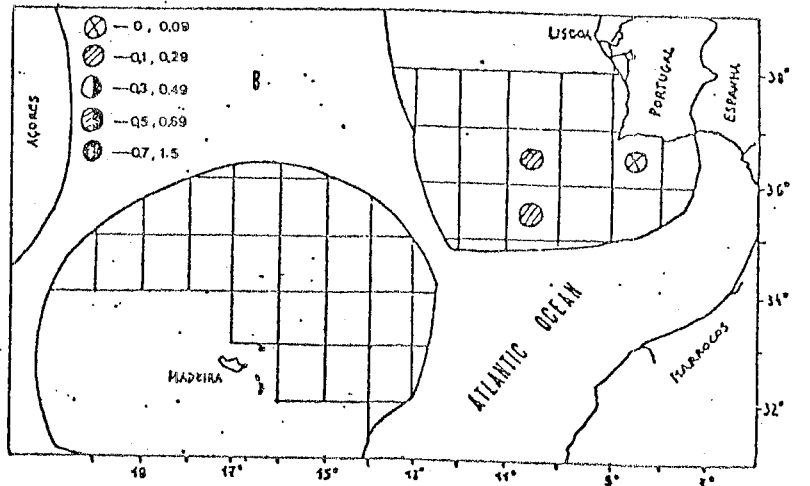
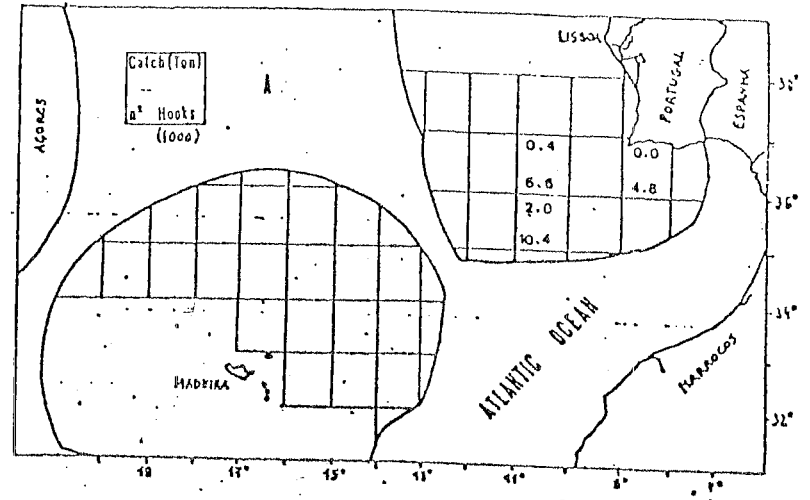


Figure 14 - 2nd biweek of May/84.

A - Japanese longline total catch and effort (1 000 hooks) by area (1°x1°).

B - cpue (ton/1 000 hooks) by area (1°x1°).

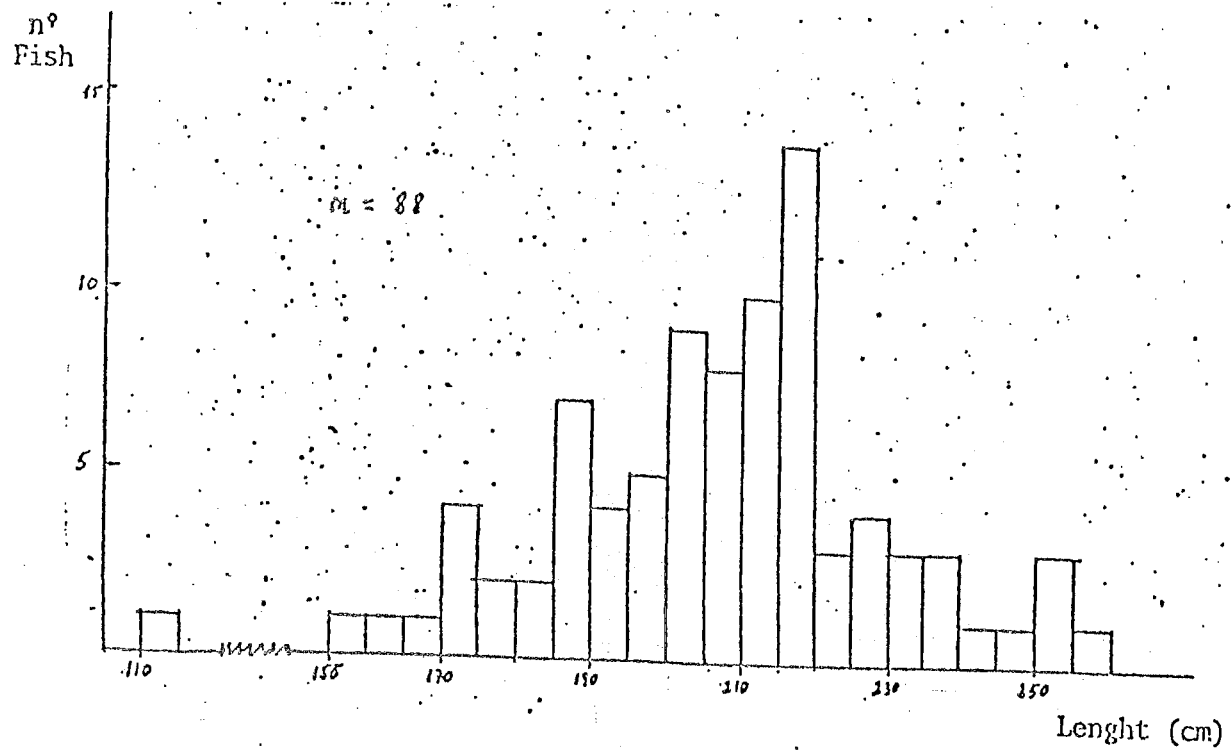


Figure 15 - Length frequency of 88 bluefins caught by longline, sampled during April/81 in South Continental waters.