

PORTUGUESE TUNA CATCH AND EFFORT STATISTICS

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SUMMARY

According to ICCAT recommendation (Miyake, 1981), Portuguese catch statistics were reviewed. Data of Madeira catches in 1950-55 are introduced and an improvement in the mainland statistics is achieved in face of a new data source.

Portuguese effort statistics for 1972-79 are presented.

RESUME

Suite à une recommandation de l'ICCAT (Miyake, 1981), les statistiques portugaises de capture ont été révisées. Les prises de Madère pour 1950-55 ont été introduites, et une nouvelle source de données a permis d'améliorer les statistiques de la péninsule.

Les statistiques portugaises sur l'effort pour 1972-79 sont fournies dans le présent rapport.

RESUMEN

Siguiendo las recomendaciones de ICCAT (Miyake, 1981), se procedió a revisar las estadísticas portuguesas de captura. Se introjeron datos de captura de Madeira (1950-55), mejorándose las estadísticas del territorio continental, al contar con una nueva fuente de datos.

Se presentan las estadísticas portuguesas de esfuerzo para 1972-79.

The portuguese national office for statistics, Instituto Nacional de Estatísticas (I.N.E.) has a fisheries department which delivers through all the country landing sheets designed to record catch and effort data. In some cases however these landing sheets do not reflect anymore the needs of statistics users, namely fisheries scientists. That is precisely the case of sheets used for record tuna fisheries which solicit informations on catches brokendown by tuna sizes, not by tuna species. The reason for these kind of sheets lays on the fact that Thunnus thynnus t. accounted for the overwhelming majority of tuna catches by traps in the mainland (until 1972). Bluefin was always sold at the lot according to its size.

But fishing gears at Açores and Madeira catch a variety of species and their account for almost all the portuguese tuna catches since 1970-73. For this fisheries, landing sheets from INE are unfit.

CATCH STATISTICS

Let's briefly compare Table 1 with informations received by ICCAT and related at Miyake, 1981. Several tables are presented in this paper (Tab. 1; Tab. 2 - series A, B; Tab.3) showing data from several sources: FAO (Tab. 1) and fisheries offices of the mainland, Açores and Madeira (Tab. 2 - A, B and Tab. 3).

Total values from Table 1 and those in tab. 1 and tab.2-B are rather similar or even equal, as tab. 2-B. Breakdown by species however, is completely different.

Something alike happens when comparing Table 1 and tab. 3. In spite of the inexistence of remarkable disagreement in what concerns total values I find more judicious the use of tab. 3 for Açores and Madeira.

Table 1 seems to enclose tab. 1 but the former also comprises catches of the so-called "bonitos and sarrajões". Actually such are common names for Sarda sarda, Katsuwonus pelamis and Auxis thazard.

Clearly Table 1 might have been the source of FAO as well as of Miyake's series A and B.

Therefore I propose the adoption of Table 1 total catches in the mainland and the adoption of Miyake's tab. 3 for catches at Madeira and Açores. I also propose the use of table 1 values for total catches at Madeira for the period 1950-55.

Trap catches at the mainland (1950-72)

Up to 1972 there was a trap fishery aiming bluefin at the south coast of the mainland.

Table 2 shows data concerning this fishery. At the second line are shown anual catches in number of fish. These values are superior to those from MIYAKE, 1981 (tab.4) that is because they enclose "bonito and sarrajão" above mentioned which catches I think that were not reported to ICCAT.

I ignore the existence of any record of trap catches in weight. Therefore I don't know how were those data calculated and then reported to ICCAT so that they appear in the above mentioned tab. 4.

There seems to be two ways to estimate trap catches in weight:

a) Making use of total tuna catches in weight for the all South part of the mainland. The first line of table 2 shows these values. This obviously leads to an overestimation of trap catches. However tuna catches outside traps in South mainland are sporadic and the error would be probably negligible.

b) Following VILELA and CADIMA, 1959 and VILELA, 1960. This authors estimated the average weight of the four size classes for the years 1958 and 1959, which are the following:

Atum (P _a).....	140 Kg
Atuarro (P _b).....	73 Kg
Albacora (P _c).....	43 Kg
Cachorreta (P _d)....	3,5 Kg

afterwards total trap catches were estimated by simply doing:

W_i = Total trap catch in weight during year i
 A_i = Total "Atuns" trap catches in number during year i
 B_i = Total "Atuarros" trap catches in number during year i
 C_i = Total "Albacoras" trap catches in number during year i
 D_i = Total "Cachorretas" trap catches in number during year i

So:

$$W_i = (A_i \times P_a) + (B_i \times P_b) + (C_i \times P_c) + (D_i \times P_d)$$

To this value of W_i must still be added:

$$+ (E_i \times P_e)$$

E_i = Total "bonitos and sarrajões" trap catches during year i

P_i = Average weight, proposed in MIYAKE, 1981: 4 Kg

Following this last method values in the third line of table 2 were calculated. Notice the similarity between this values and those shown in MIYAKE (op.cit., tab.4 in "trap catch-MT"). This author however reports inferior values of trap catches in number than those shown here at the second line of table 2. Therefore annual average weight of tunas caught by traps must have been smaller than those reported by MIYAKE (op.cit., tab.4).

Portuguese tuna catches

Table 3 shows estimates of portuguese tuna catches, broken by area and by species, for the period 1950-1979.

A. Mainland

- I take:
- 1) Total mainland catches in weight presented at Table 1
 - 2) Total number of fish caught by traps, presented at the second line of Table 2.
 - 3) Total weight of fishes caught by traps, presented at the third line of table 2.
 - 4) Assumptions placed by MIYAKE (op.cit.) to estimate bluefin catches by traps, i.e. average

sizes of bluefin caught by Portuguese traps are the same as those caught by Spanish traps for the respective years; average size of tunas other than bluefin caught by Portuguese traps was 4 Kg.

- 5) Difference between total mainland catches and trap catches is caused by the surface fishery. Breakdown by species cannot be done yet.

Bluefin tuna catches by traps were estimated as following (MIYAKE, 1931):

C_n = Total number of fish caught by traps
 C_w = Total weight of fish caught by traps (Kg)
 B_n = Total number of bluefin tunas caught by traps
 B_w = Total weight of bluefin tunas caught by traps (Kg)
 \bar{W} = Average annual weight of bluefin tunas (Kg) (data from Spanish traps)

$$B_n = \frac{C_w - 4 \times C_n}{\bar{W} - 4} \quad ; \quad B_w = B_n \times \bar{W}$$

The weak points of this estimate are the following:

- i. The method used to estimate total trap catches in weight. Actually average size class weights change every year.
- ii. Assumption n° 4. If significant quantity of large bigeye tunas were caught by traps, average weight of fishes other than bluefin would not be 4 Kg.

B. Açores

All data from Miyake's tab. 3 are assumed to fit. Breakdown by species was done exactly as in MIYAKE (op.cit.).

C. Madeira

- I take: 1) Total catches for Madeira during the period 1950-55 presented at Table 1.

2) Data reported in Miyake's tab. 3 for the period 1956-79

Breakdown by species was done as in MIYAKE(op.cit.)

FISHING EFFORT

Mainland

Traps - The number of traps placed in South mainland was the following:

Period	Number of traps
1950 to 1965	5
1966 and 1967	3
1968 to 1972	2
1973 and after	0

Other gears- It is not possible yet to quantify fishing effort of other gears catching tunas in the mainland. This gears aim other species and catch tunas sporadically.

Açores and Madeira

Tuna fisheries at Açores and Madeira is accomplished by small baitboats with different gross tonnages, different engines and holding a different number of fishermen. The records of powerboats which operated during the first semester of 1981 give an idea of the referred variation.

Açores

	Gr.ton.	Engine(HP)	number of fishermen
			by boat
Mean value	49	299	16
Standar-devi.	11,6	71,2	6
Coef. of vari.	23,7	23,8	37,5
Maximum value	71	400	33
Minimum value	34	125	9

number of powerboats with data: 22

Madeira

	Gr. ton.	Engine(HP)	number of fishermen
			by boat
Mean value	25	114	10
Standard-devi.	5	99,2	5,5
Coef. of vari.	20	87	55
Maximum value	63	370	23
Minimum value	3	5	3

number of powerboats with available data: 69

Such a variation is coincident with informations from PAES DA FRANCA and C.COSTA,1979 in what concerns gross tonnage and engines.

Fishing effort at Açores and Madeira was extracted from "ESTATISTICAS DAS PESCAS". The few data available still do not allow effort standardization by baitboat. Data only concern the period from 1972 to 1979 and there are some gaps on it:

Madeira:

Year	Days fished ¹	Catch (MT) ⁽²⁾	Gross Ton. ⁽³⁾	Fishermen ⁽⁴⁾	
				31/VII	31/XII
1972	452	2835	1006	?	?
1973	2 368	3972	929	?	?
1974	?	-	1012	569	646
1975	9 130	5113	968	632	674
1976	12 360	3283	1557	908	960
1977	9 612	2674	1463	987	987
1978	9 345	2273	1761	949	949
1979	2 006	905	1725	828	828

Açores:

Year	Days fished ⁽¹⁾	Catch (MT) ⁽²⁾	Gross Ton. ⁽³⁾	Fishermen ⁽⁴⁾	
				31/VII	31/XII
1972	?	-	1157	126	132
1973	2 071	5019	1839	133	133
1974	?	-	2807	143	143
1975	1 001	1221	1223	342	?
1976	1 141	1469	975	230	226
1977	1 740	2951	2095	229	227
1978	1 656	5222	2716	278	459
1979	1 344	3909	1587	304	304

- (1) - Only days with effective catches
(2) - Total tuna catches correspondent to the days fished mentioned
(3) - Total gross tonnage of the vessels which operated during days mentioned.
(4) - Fishermen registered for tuna fishing. Register in two different times.

Although some tuna species predominate in catches of Açores and Madeira (Bigeye, Skipjack), fishing effort does not seem to be pointed toward any particular specie. Açores and Madeira are marginally placed in respect to the geographical distribution of some tuna stocks.

Total anual effort was estimated dividing total anual catches by the respective anual cpue (catches per day fished). Brackets refer to the average cpue during period 72-79 by area.

Table 4 presents the final results of total anual effort.

		1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Continente (Mainland)	ATUM	1110	998	1574	1703	468	1320	2045	1143	876,4	963,5	1836,3	1440,4	1223,2	854,7	493,1	290,2
	ATUARRO	342	348	543	393	283	203	302	151	101,5	115,7	35,8	108,4	35	41,4	14,8	18,2
	ALBACORA	139	306	563	653	135	292	357	115	1112,1	205,7	474,4	76,4	25,1	16,2	34,3	110,1
	CACHORRETA	75	22	7	30	27	3	31	14	2,3	25,8	0,5	2,6	0,9	1,1	17,8	0,2
	Benito e Sarrija	106	414	291	534	171	159	183	436	387,8	384,3	126,4	134,8	202,5	164,2	185,5	33,2
	TOTAL	1722	2088	3223	3313	1584	1977	2918	1909	2475,1	1695	2473,4	1762,6	1486,7	1077,6	1057,2	451,4
Madeira	ATUM	621	505	530	471	1775	2998	664	2624	1154,6	1257,5	1263,1	1133,1	2528,4	2000,8	2605	2060,4
	ATUARRO					0											
	ALBACORA				1					0,2							
	CACHORRETA	1	1		2						0,8						
	Benito e Sarrija	87	140	89	468	175	100	404	123	80,8	187,4	160,4	40,7	931	553,5	802,9	971,4
	TOTAL	709	646	619	1442	1950	3098	1068	2747	1235,4	1445,7	1523,5	1173,8	3459,4	2554,3	3407,9	3071,8
Açores	ATUM	1		25	321	0	259	1		202,4	74,5	0,4		843,5	339,6	509,5	1181,2
	ATUARRO		56	217		0											
	ALBACORA	211	1172	1583	1222	1712	2645	2345	5470	2620,9	5239,9	5500	5017,5	3610,1	5398	1584,2	5729,5
	CACHORRETA		4	2		0	1			0,3	0,4					0,4	
	Benito e Sarrija	596	356	587	885	225	122	550	41	401,7	436,5	581	1044,7	1778,3	3893,1	2850	1416
	TOTAL	808	1588	2414	2428	1937	3027	2896	5511	3235,3	5751,3	6081,4	6062,2	6231,9	9670,7	4944,1	8332,7
	TOTAL	3289	4322	6256	7183	5471	8102	6882	10167	6936	4392	10078,3	8998,6	11178	13302,6	9409,2	11816,4

table 1. Portuguese Tuna catches

Table 1. Capturas portuguesas de tunídeos

Fonte: "ESTATÍSTICAS DAS PESCAS MARÍTIMAS"
(from)

		1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	
Continente (Mainland)	ATUM	137,4	224,2	113,1	373,9	170	5	3	17	38	146	145	100	120	86		
	ATUARRO	16,4	20,4	3,8	2,5		7	2									
	ALBACORA	43,9	0,9	150,4	112,3	26	119	67			26	19	100	324	6		
	CACHORRETA	6,2	0		13,2			11									
	Bonito e Sarrajá	40,6	72	67	267,9	131	370	123	4	4	6	98	85	59	107		
	TOTAL	244,5	317,5	334,3	764,8	327	501	206	21	42	178	262	285	503	194		
Madeira	ATUM	2212,4	1985,4	1038,1	2033,7	2382	1722	1102	2669	5535	5238	2444	3481	2637	2	198	
	ATUARRO																
	ALBACORA				28,5							0			1038	195,8	
	CACHORRETA							782									
	Bonito e Sarrajá	326,6	1363,2	746,3	743,4	779	1609	1102	742	458	499	1387	443	78	990	39,1	
	TOTAL	2539	3348,6	1784,4	2865,6	3161	3331	1884	3411	5943	5737	3831	3934	2713	2036	264	
Açores	ATUM	184,6		3,5	328,8	413	450	1671	2009	4352	1486	571	665	1528	1199	1420	
	ATUARRO		3														
	ALBACORA	915,5	6305,4	726,5	3131	2124	6	1	1887	602	301	648	415	1240	891	1539	
	CACHORRETA	0,1	0,2		27,1	15		0		6							
	Bonito e Sarrajá	2276,9	1133,1	417,3	1008,6	1008	1589	2415	1450	387	71	836	4142	6674	2668	1552	
	TOTAL	3382,1	7441,7	1147,3	4445,5	3557	2045	4087	5352	5347	1858	2055	5222	9403	4758	4511	
TOTAL	6165,6	11107,8	3266	8070,4	7045	5877	6177	8784	11382	7773	6148	9431	12658	6943			

table 1. (contim.)

Table 1 (Conti.) Fonte: 1966-69 - "ESTATÍSTICAS DAS PESCAS MARÍTIMAS"
(from:) 1969-80 - "ESTATÍSTICAS DA PESCA"

		1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
① Continente Sul (Mainland; South Zone)	ATUM	1081,3	975,6	1483,3	1651,7	942,5	1025,8	2014,7	1174,6	561,1	833,4	912,3	1421,2	691	321,6	373,5	68
	ATUARRU	342,4	347,9	511,6	373	282,6	203,5	302,3	150,7	101,5	115,2	35,8	108,4	35	41,4	14,8	18,2
	ALBACORA	133,5	181,1	250,5	158,1	84,3	47,5	102	44,5	60,6	34,2	43,7	40,4	25,1	16,2	9,2	2,4
	CACHORRETA	47,2	14,6	6	24,8	18,2	3	31,2	8,4	0,9	25,3	0,5	2,0	0,3	1,1	17,5	0
	Branco e Sarrizal	75,1	160,6	83,1	173,5	82,4	25,5	76,4	157,8	321,2	177,7	44,4	81,0	63,2	142,2	128,2	26,1
Unit: M.Tons	TOTAL	1685,1	1619,8	2333,5	2436	1440	1304,3	2526,6	1536	1655,3	1186,3	1480,4	1653	814,6	578	543,7	114,7
② Armações (Traps)	ATUM	7639	6795	10376	15554	6567	7108	24178	5721	3792	5583	6915	9991	4491	2226	2090	492
	ATUARRU	4558	3290	6531	5687	3486	2384	3348	1540	1424	1405	487	1342	447	573	189	287
	ALBACORA	2600	2956	4108	2645	1079	440	1050	426	145	163	295	127	186	183	63	22
	CACHORRETA	2082	4008	526	1048	897	338	684	342	172	8693	59	788	47	453	4111	7
	Branco e Sarrizal	5128	4247	9713	1687	2644	3538	18325	81343	84592	28753	25238	8703	7853	40989	46689	8040
Unit: number of fish	TOTAL	22007	21796	31194	26621	14675	13808	37635	57777	90345	44597	33034	21001	13024	44364	108148	8853
③ Armações (Traps)	ATUM	1060,5	954,3	1444,2	2177,6	914,4	995,1	1484,9	716,9	558,4	781,6	968,1	1348,7	628,7	311,6	293,4	69,6
	ATUARRU	332,2	276,7	476,8	415,3	254,5	174	244,4	112,4	104	102,6	35,5	48	32,6	32,4	13,8	21
	ALBACORA	111,8	127,1	126,6	113,7	40,4	18,4	45,2	18,3	6,2	7	10,7	7,6	8	7,9	2,7	0,9
	CACHORRETA	7,3	14,0	1,8	3,7	3,1	6,2	2,4	1,2	0,7	30,4	0,2	2,8	0,2	1,6	31,9	0
	Branco e Sarrizal	20,5	17	38,9	6,7	10,6	14,2	73,5	325,4	338,4	115	101,1	34,8	31,4	164	386,8	32,2
Unit: M.Tons * Estimated	TOTAL	1544,8	1386,1	2138,3	2776,4	1234	1203,4	2350,4	1174,2	1008,2	1036,6	1117,6	1541,4	700,9	522,5	728,6	123,2

Table 2 - Capturas de tunídeos no Sul do Continente

1. Capturas em peso (toda a zona Sul) - Fonte: "ESTAT. DAS PESCAS MARÍTIMAS"
2. Capturas das armações em nº de peixes - Fonte: " " " " "
3. Capturas em peso estimado (ver a explicação no texto) nas armações

Table 2 - Tuna catches at south mainland

1. Catches in weight (all the south mainland)
2. Trap catches in number of fish
3. trap catches in weight (M.Tons) (estimated)

		1966	1967	1968	1969	1970	1971	1972	1973							
① Continente Sul (Mainland ; South zone) Unit: M. Tons	ATUM	137	223	66	356,9		1	1								
	ATVARRO	16,4	20,4	3,8	2,5											
	ALBACORA	41,9	0,7	0,1	0,8		5	10								
	CACHORRETA	6,2	0		12,2											
	Bonito e Sardinhas	26,8	48,6	28	192,5		29	5								
	TOTAL	228,3	292,7	97,9	564,9	255	35	16	4							
② Armações (Traps) Unit: number of fish	ATUM	433	1366	365	1867											
	ATVARRO	224	263	32	36											
	ALBACORA	31	4	1	4		NO DATA									
	CACHORRETA	2006	39	1	2263											
	Bonito e Sardinhas	15507	29572	17047	40995											
	TOTAL	18291	39244	17446	45155											
③ Armações (Traps) Unit: M. Tons* * Estimado	ATUM	129,2	171,2	51,1	261,4											
	ATVARRO	16,4	14,2	2,3	2,6											
	ALBACORA	1,3	0,2	0	0,2											
	CACHORRETA	7	0,1	0	7,9											
	Bonito e Sardinhas	62	118,3	69,8	164											
	TOTAL	215,9	329	123,2	436,1											

Table 2 (Conti.)

1. Fonte: 1966-69 - "ESTAT. DAS PESCAS MARÍTIMAS"
(From) 1970-73 - "ESTATÍSTICAS DA PESCA"
2. Fonte: 1966-69 - "ÉSTAT. DAS PESCAS MARÍTIMAS"
(From) 1970-72 - "ESTATÍSTICAS DA PESCA"
3. Capturas em peso estimado

		1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
MAINLAND	TRAP																
	BFT	1501,0	1347,5	2086,1	2647,4	1212,6	1181,4	2279,6	840,1	660,9	882,6	1015,8	1477,3	665,7	353,7	302,9	90,3
	OTH	40,8	38,6	52,2	19,5	21,4	22	70,8	334,1	347,3	154	101,8	42,6	35,2	168,8	423,7	33,4
	Sub TOTAL	1541,8	1386,1	2138,3	2716,9	1234	1203,4	2350,4	1174,2	1008,2	1036,6	1117,6	1519,9	700,9	522,5	728,6	123,7
	SURF VESL.	230,2	701,9	1084,7	596,1	350	773,6	567,6	734,8	1466,8	658,4	1353,4	221,1	786,1	555,5	328,4	328,3
	TOTAL	1772	2088	3223	3313	1584	1977	2918	1909	2475	1695	2471	1763	1487	1078	1057	452
MADEIRA	RFT																
	YFT																
	ALB																
	BET	598	545	522	1217	1146	2615	739	2958	1340	1977	1554	1276	2621	2686	2400	2583
	SKJ	111	101	97	225	304	483	345	129	86	167	158	34	458	553	830	988
	BCN																
SWD															9	6	
TOTAL	709	646	619	1442	1450	3098	1084	3087	1426	2144	1712	1310	3579	3237	3739	3577	
AÇORES	BFT																
	YFT																
	ALB									300	570	600	600	620	470	500	830
	BET	216	1400	1496	1734	1286	2193	2030	5308	2497	4277	4573	4539	3967	5335	1784	6087
	SKJ	543	358	484	561	416	709	657	26	314	170	461	791	1317	2847	2315	1240
	OTH																
TOTAL	803	1464	1480	2245	1702	2902	2687	5334	3111	5017	5634	5920	5904	9152	4544	8157	
TOTAL	BFT	1501	1348	2086	2647	1213	1181	2280	840	661	883	1016	1449	666	354	303	90
	YFT																
	ALB									300	570	600	600	620	470	500	830
	BET	808	1651	2018	2951	2932	4808	2769	8266	3837	6254	6127	5805	6588	8021	4684	8670
	SKJ	704	459	581	786	720	1192	1002	155	400	337	619	825	2275	3400	3145	2218
	BCN																
SWD																	
OTH	221	740	1137	616	371	796	638	1069	1814	812	1457	264	821	724	754	9	6
TOTAL	3284	4198	5822	7050	5236	7977	6689	10330	7012	8856	9819	8993	10970	13469	9395	12186	

Table 3 Proposed portuguese catch statistics

Tabela 3 - Proposta de estatísticas portuguesas de capturas de tunídeos.

		1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	
MAINLAND	TRAP																
	BFT	122,2	208,6	54,5	260,9												
	OTH	93,7	120,4	68,2	175,2												
	Sub Total	215,9	329	123,2	436,1												
	SURF. UNCL.	29,1	-	210,8	333,9				21	42	178	262	287	503	199		
TOTAL	245	329 (*)	334	770	327 (1)	501 (1)	206 (1)	21	42	178	262	285	503	149			
MADEIRA	BFT											17	10	43	28		
	YFT																
	ALB									127	173	573	38	77	18		
	BET	3336	2396	437	2614	2159	1954	1244	3031	5708	5008	1959	3582	2791	1015		
	SKJ	321	1359	776	756	835	1491	781	750	446	491	1340	255	129	39		
	BON																
	SWO	15	11	12	11	8	11	21	37	92	58	32	38	17	28		
	TOTAL	3672	3766	1725	3371	3002	3456	2046	3818	6373	6330	3821	3923	3057	1140		
AÇORES	BFT																
	YFT									63	79	6	4	12	8		
	ALB	340	740	110	500	200	300	434	887	1102	138	3					
	BET	716	5655	659	3005	2973	933	3718	2824	4751	2029	37	24	8	131		
	SKJ	2027	1188	362	982	124	2709	2429	1456	1231	78	828	4133	4350	2919		
	OTH												0	0	0		
	TOTAL	3163	7583	1131	4487	3297	3942	6080	5167	7177	2325	1845	5101	6831	5428		
TOTAL	BFT	122	209	55	261												
	YFT									63	79	23	14	55	36		
	ALB	340	740	110	500	200	300	434	887	1239	411	610	62	85	149		
	BET	4052	8051	1596	5619	5132	2887	3962	5855	10489	7037	2930	4522	5357	3385		
	SKJ	2348	2547	1138	1738	959	4200	3710	2206	1677	569	2068	4388	4379	2958		
	BON																
	SWO	15	11	12	11	8	11	21	37	92	58	32	38	17	28		
	OTH	203	109	279	509	327	501	205	21	42	178	262	285	504	199		
TOTAL	7080	11667	3190	8638	6626	7899	8332	9006	13592	8833	5928	4309	10391	6767			

Table 3 (Cont'n.)

(*) - Valor subestimado
Underestimated value

(1) Não há informações para referar em espécies
NOT available data To allow breakdown

Açores			
Year	cpue (ton/day fished)	Catch (ton)	total effort (days fished)
1972	(2,12)	6080	2875
1973	2,42	5167	2132
1974	(2,12)	7177	3385
1975	1,22	2325	1906
1976	1,29	1845	1433
1977	1,70	5101	3008
1978	3,15	6831	2166
1979	2,91	5428	1865
$\overline{\text{CPUE}} = 2,12$			
Madeira			
Year	cpue (ton/day fished)	Catch (ton)	total effort (days fished)
1972	6,27	2046	326
1973	1,68	3818	2276
1974	(1,39)	6373	4585
1975	0,56	6330	11303
1976	0,27	3821	14385
1977	0,28	3923	14102
1978	0,24	3057	12568
1979	0,45	1140	2527
$\overline{\text{cpue}} = 1,39 \text{ ton/day fished}$			

Table 4 - Estimation of total effort in days fished, for the period 1972-79 in Açores and Madeira.