

REVIEW OF SWORDFISH FISHING 1986-1993

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SWORDFISH FISHING 1986-1993

1. INTRODUCTION.

The present study is carried out in order to meet some of the needs of the 1st Meeting of Ad-hoc GFCM/ICCAT Joint Working Group on stocks of Large Pelagic fish in the Mediterranean Sea which will be held in Malaga, Spain in September 1994.

This study covers the Swordfish Fishing in Cyprus for the years 1986-1993. In fact it is based on Supplement I, with the addition of the years 1990 - 1993.

Although the object of the study is the period 86-93, for practical reasons, the tables and the graphs cited have been unified and cover the whole period between 1976-1993. Some comparisons are made between the first period 1976-1985 and 1986-1993. In this way, a reader can have a definite picture on the local Swordfish fishery since its commencement till today.

2. CYPRUS FISHING INDUSTRY

The various subsectors of the Cyprus Fishing Industry with their respective production are seen on Table I. (Fish Production, 1982-1993).

3. SWORDFISH FISHERY (see supplement I).

3.1 Vessels (see supplement I)

4. STATISTICS (see supplement I)

4.1 Fishing Effort (Table 3. Fishing Effort and Production 1976-1993).

4.2 Production-Productivity (See previous reports)

Looking into Fig. 3, Mean Weight of Fish, 1976-1993, although there is a decline, it seems that this can be distinguished into three periods. (a) 1976-1981 when the mean weight of fish reduced slightly from 59 to 55kg. (b)

1982-84 when the mean weight was between 47-44kg and (c) 1986-92 when the mean weight fluctuated between 37-30 kg. In 1993 there is a sharp drop to 20 kg which could be attributed at least partly, to the fact that during 1993 a lot of small swordfish were caught on surface long lines with smaller hooks which were targeting other fish such as dolfinfish (*Coryphaena hippurus*) etc.

The catch/hook (Fig.4) shows that during the last years (87-93) it has been stabilised between 100-130 g/hook with the exception of 1992 when it was very low (50g/hook). For the situation of swordfish fishing in 1992 see report "Swordfish Fishery January-August 1992".

Table 1 Fish Production, 1982-1993

SECTOR	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
	m.tons	m.tons	m.tons	m.tons	m.tons	m.tons	m.tons	m.tons	m.tons	m.tons	m.tons	m.tons
Inshore Fishery	880	1.252	1.487	1.544	1.541	1.610	1.570	1.584	1.598	1.650	1.808	1.786
Local Trawl Fishery	273	451	465	483	499	482	492	510	518	550	487	464
Intern. Trawl Fishery	282	279	183	274	332	353	311	297	283	250	298	317
Swordfish Fishery	124	33	72	80	176	106	145	169	219	190	73	138
Trout Culture	46	46	56	53	53	47	51	56	73	70	94	92
Marine Culture	-	-	-	-	-	3	6	30	50	57	70	180
Total	1.605	2.061	2.263	2.434	2.601	2.601	2.575	2.646	2.741	2.767	2.830	2.977

Table 2 Development of swordfish Fishing Fleet, 1977-1993

Year	No. Of Vessels	Total Length (ft)	Average Length/Boat	Up to 30'		31 - 35'		36 - 40'		Over 40'	
				No.	%	No.	%	No.	%	No.	%
1977	39	1168	29,95	27	69	8	21	2	5	2	5
1978	22	685	31,14	14	64	6	27	-	-	2	9
1979	26	832	32,00	14	54	6	23	1	4	5	19
1980	24	746	32,75	14	58	4	17	1	4	5	21
1981	20	674	33,70	8	40	5	25	2	10	5	25
1982	14	506	36,14	3	21	4	29	2	14	5	36
1983	5	207	41,40	-	-	-	-	1	20	4	80
1984	15	520	36,67	3	20	5	33	3	20	4	27
1985	15	526	35,67	3	19	4	27	4	27	4	27
1986	32	1156	36,13	9	28	6	19	6	10	11	34
1987	18	777	43,17	2	11	1	6	7	39	8	44
1988	24	1072	44,67	-	-	2	8	5	21	17	71
1989	20	970	48,50	1	5	-	-	2	10	17	85
1990	20	949	47,45	-	-	-	-	3	15	17	85
1991	22	1041	47,32	-	-	-	-	3	14	19	86
1992	19	915	48,16	1	5	-	-	2	10	16	85
1993	19	830	43,68	2	10	1	5	2	10	14	75

Note: The number of vessels in this table is lower than that in Table 3 because the Trawlers are not included here

Fig. 1 AVERAGE No OF HOOKS/BOAT/DAY 1976-1993

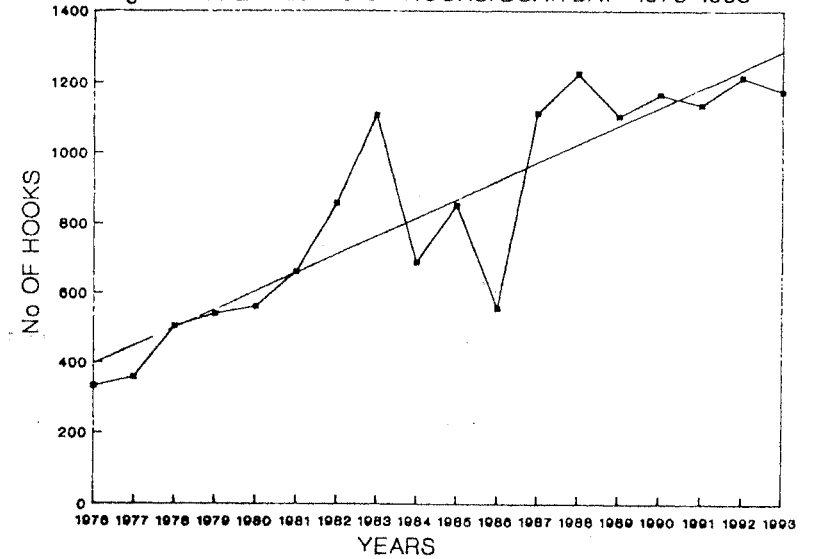
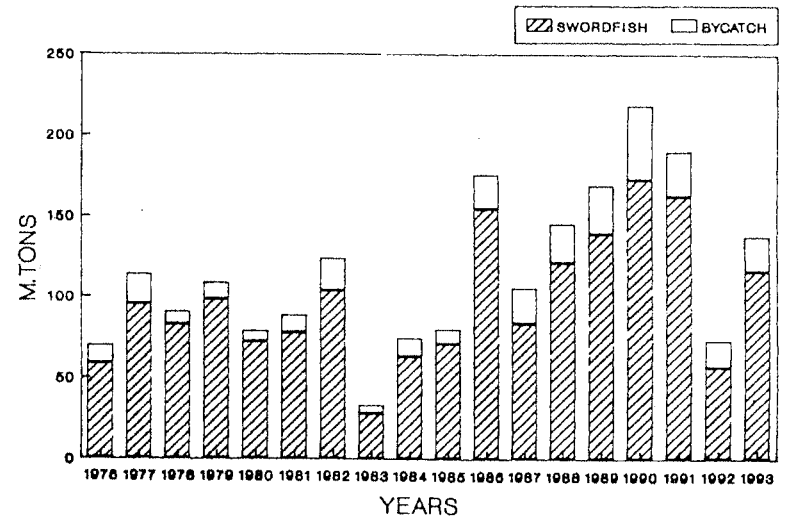
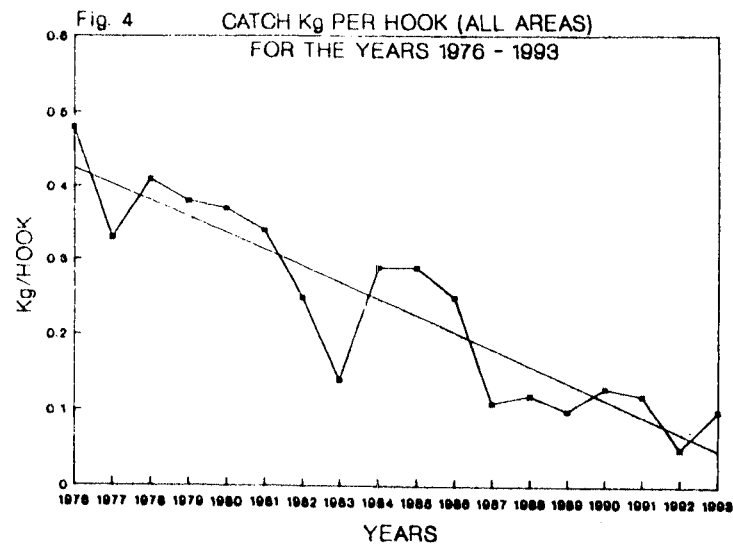
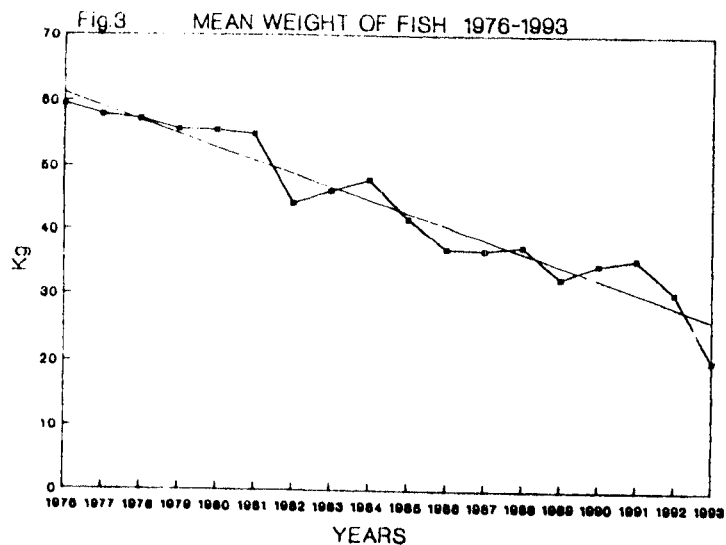


Table: 3 FISHING EFFORT AND PRODUCTION 1976-1993

Year	EFFORT					PRODUCTION								
	No of Boats	Work Days	No. of Hooks	AVERAGE		SWORDFISH				BY CATCH		TOTAL CATCH		
				W.D./Boat	Hooks/Boat/Day	Weight (Kg)	No. of Fish	Mean Weight	Catch/W.D.	Catch/Hook	Weight	Weight	Catch/W.D.	Catch/Hook
1976	43	369	122800	8,6	333	58634	986	59,5	158,9	0,48	11504	70138	190,1	0,57
1977	44	809	290161	18,4	359	95079	1642	57,9	117,5	0,33	18853	113932	140,8	0,39
1978	23	396	200278	17,2	506	82488	1440	57,3	208,3	0,41	8230	90718	229,1	0,45
1979	27	475	256938	17,6	541	97983	1756	55,7	206,1	0,38	10543	108526	228,5	0,42
1980	24	347	195422	14,5	563	72155	1297	55,6	207,9	0,37	6635	78790	227,1	0,40
1981	20	350	231276	17,5	661	77669	1413	55,0	221,9	0,34	10653	88322	252,3	0,38
1982	15	490	420490	32,7	858	103479	2343	44,2	211,2	0,25	20360	123839	252,7	0,29
1983	7	174	192750	24,9	1108	27587	598	46,1	158,5	0,14	5243	32830	188,7	0,17
1984	16	318	218388	15,9	687	62915	1312	47,9	197,8	0,29	11566	74481	234,2	0,34
1985	16	291	248230	18,2	853	70865	1701	41,7	243,5	0,29	9106	79971	274,8	0,32
1986	34	1101	611951	32,4	556	154377	4168	37,0	140,2	0,25	21292	175669	159,6	0,29
1987	19	681	758110	35,8	1113	83528	2269	36,8	122,7	0,11	22036	105564	155,0	0,14
1988	25	795	973600	31,8	1225	121121	3236	37,4	152,4	0,12	24220	145341	182,8	0,15
1989	20	1215	1340910	60,7	1104	139300	4296	32,4	114,7	0,10	29794	169094	139,2	0,13
1990	20	1112	1296140	55,6	1166	172597	4993	34,6	155,2	0,13	45968	218565	196,6	0,17
1991	22	1205	1368570	54,8	1136	162380	4588	35,4	134,8	0,12	27916	190296	157,9	0,14
1992	19	937	1138610	49,3	1215	56194	1861	30,2	59,9	0,05	16862	73056	76,0	0,06
1993	19	1024	1202125	53,9	1174	116136	5757	20,2	113,4	0,10	22032	138168	134,9	0,11

Fig. 2 PRODUCTION IN TONS 1976-1993





4.2.1 Production-Productivity by Month (see previous reports).

From Fig. 5, we see that during the first period 1976-1985 there were privileged months, May, June, July, with higher production and productivity. During the second period, 1986-1989, although the situation was similar we had smaller differences between the traditionally privileged months and the other months. Coming now to the third period, 1990-1993, the trend for a rather smoother distribution of the production through the months continues while September is now slightly the most productive month and August and October are almost as good as June and July and quite better than May. The productivity is almost the same throughout the months.

From fishing point of view, looking into the three periods, it is easily realised that systematic fishing during the first period was carried out only during the summer period. While gradually during the second and third period systematic fishing is carried out almost all the year round. This development supports full time occupation which leads to the improvement of the whole Swordfish Fishing Industry.

Looking into Fig. 6 we see that, the two curves corresponding to the periods, 1986-1989 and 1990-1993, are facsimile for almost all the month showing a more or less steady mean weight of fish caught throughout the months.

From Fig. 7 it is seen that the catch/hook during the first period had fluctuations through the months with higher values during summer.

During the other periods besides the fact that the productivity was much less there were not any substantial fluctuations. This has practical value for fishermen because they can fish at any time of the year profitably provided the weather allows it. Something that it was doubtful in the past.

Table:4 EFFORT AND PRODUCTION BY MONTH FOR THE PERIOD 1976-1985

MONTH	EFFORT		P R O D U C T I O N (SWORDFISH)					
	WORK. DAYS	No OF HOOKS	WEIGHT Kg	No OF FISH	MEAN Wt Kg	CATCH/ W.DAY	CATCH/ HOOK	% ON TOTAL CATCH
JAN	4	800	46	3	15,33	11,50	0,06	
FEB	15	4.310	863	15	57,53	57,53	0,20	0,12
MAR	72	20.835	6.054	106	57,11	84,08	0,29	0,81
APR	131	80.832	19.604	326	60,13	149,65	0,24	2,62
MAY	881	508.171	170.798	2.922	58,45	193,87	0,34	22,81
JUN	1130	720.255	243.691	4.416	55,18	215,66	0,34	32,54
JUL	808	502.034	165.969	3.274	50,69	205,41	0,33	22,16
AUG	278	144.536	35.987	739	48,70	129,45	0,25	4,81
SEP	307	177.290	42.417	1.135	37,37	138,17	0,24	5,66
OCT	308	182.670	53.275	1.352	39,40	172,97	0,29	7,11
NOV	85	34.700	10.151	200	50,76	119,42	0,29	1,36
DEC	0	0	0	0	0,00	0,00	0,00	0,00

Table:4(a) EFFORT AND PRODUCTION BY MONTH FOR THE PERIOD 1986-1989

MONTH	EFFORT		P R O D U C T I O N (SWORDFISH)					
	WORK. DAYS	No OF HOOKS	WEIGHT Kg	No OF FISH	MEAN Wt Kg	CATCH/ W.DAY	CATCH/ HOOK	% ON TOTAL CATCH
JAN	0	0	0	0	0,00	0,00	0,00	
FEB	2	2.800	253	7	36,14	126,50	0,09	0,05
MAR	47	40.525	4.733	146	32,42	100,70	0,12	0,95
APR	358	395.710	38.927	1.060	36,72	108,73	0,10	7,81
MAY	602	628.020	86.297	2.275	37,93	143,35	0,14	17,32
JUN	667	689.120	109.358	2.740	39,91	163,96	0,16	21,95
JUL	720	747.895	110.565	2.854	38,74	153,56	0,15	22,19
AUG	347	389.380	42.303	1.166	36,28	121,91	0,11	8,49
SEP	416	430.100	52.284	1.644	31,80	125,68	0,12	10,49
OCT	565	281.341	40.467	1.428	28,34	71,62	0,14	8,12
NOV	58	69.290	11.329	543	20,86	195,33	0,16	2,27
DEC	10	10.700	1.810	106	17,08	181,00	0,17	0,36

Table:4(b) EFFORT AND PRODUCTION BY MONTH FOR THE PERIOD 1990-1993

MONTH	EFFORT		P R O D U C T I O N (SWORDFISH)					
	WORK. DAYS	No OF HOOKS	WEIGHT Kg	No OF FISH	MEAN Wt Kg	CATCH/ W.DAY	CATCH/ HOOK	% ON TOTAL CATCH
JAN	6	4.600	509	15	33,93	84,83	0,11	0,10
FEB	18	18.200	1.189	34	34,97	66,06	0,07	0,23
MAR	172	177.200	16.202	553	29,30	94,20	0,09	3,19
APR	412	478.970	31.712	1.151	27,55	76,97	0,07	6,25
MAY	518	616.840	54.695	1.631	33,53	105,59	0,09	10,78
JUN	603	706.940	72.815	2.209	32,96	120,75	0,10	14,35
JUL	643	780.423	77.134	2.332	33,08	119,96	0,10	15,20
AUG	513	618.680	67.825	2.419	28,04	132,21	0,11	13,37
SEP	614	721.735	84.293	2.921	28,86	137,29	0,12	16,62
OCT	551	639.351	67.295	2.440	27,58	122,13	0,11	13,27
NOV	219	235.580	32.810	1.453	22,58	149,82	0,14	6,47
DEC	9	8.100	828	41	20,20	92,00	0,10	0,16

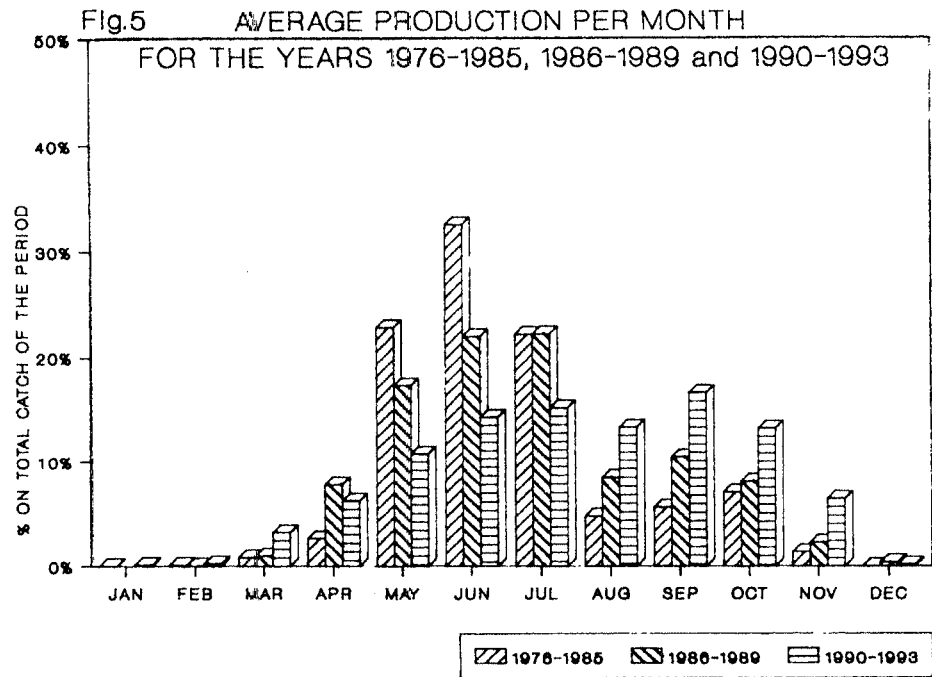


Table:4(c) EFFORT AND PRODUCTION BY MONTH FOR THE PERIOD 1986-1993

MONTH	EFFORT		PRODUCTION (SWORDFISH)					
	WORK. DAYS	No OF HOOKS	WEIGHT Kg	No OF FISH	MEAN Wt Kg	CATCH/ W.DAY	CATCH/ HOOK	% ON TOTAL CATCH
JAN	6	4.600	509	15	33,93	84,83	0,11	0,05
FEB	20	21.000	1.442	41	35,17	72,10	0,07	0,14
MAR	219	217.725	20.935	699	29,95	95,59	0,10	2,08
APR	770	874.680	70.639	2.211	31,95	91,74	0,08	7,02
MAY	1120	1.244.860	140.992	3.906	36,10	125,89	0,11	14,02
JUN	1270	1.396.060	182.173	4.949	36,81	143,44	0,13	18,12
JUL	1363	1.528.318	187.699	5.186	36,19	137,71	0,12	18,66
AUG	860	1.008.060	110.128	3.585	30,72	128,06	0,11	10,95
SEP	1030	1.151.835	136.577	4.565	29,92	132,60	0,12	13,58
OCT	1116	920.692	107.762	3.868	27,86	96,56	0,12	10,72
NOV	277	304.870	44.139	1.996	22,11	159,35	0,14	4,39
DEC	19	18.800	2.638	147	17,95	138,84	0,14	0,26

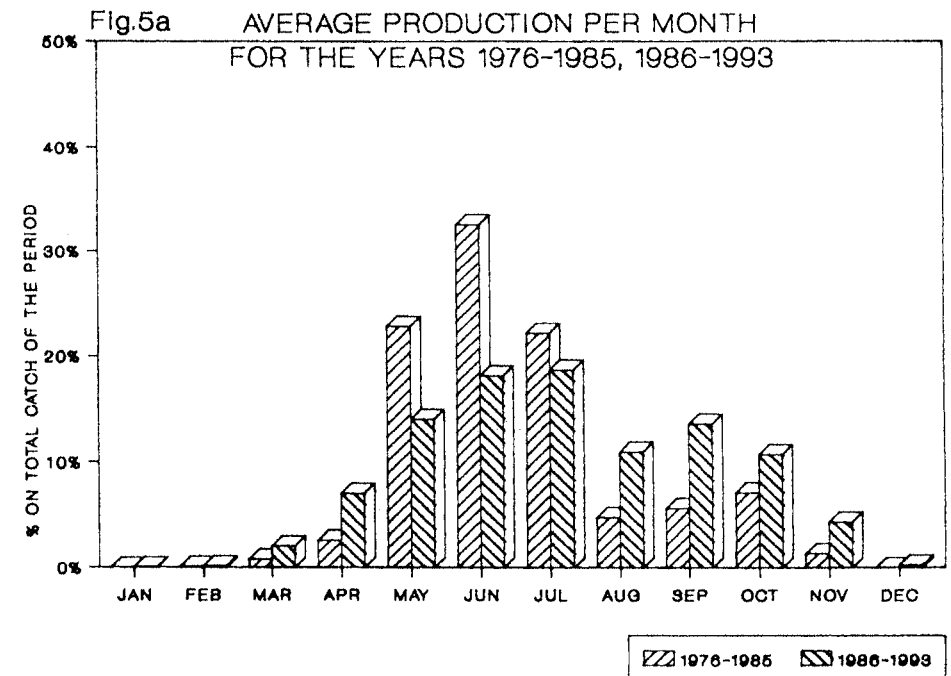


Fig. 6 AVERAGE INDIVIDUAL WT OF SWORDFISH (Kg) BY MONTH

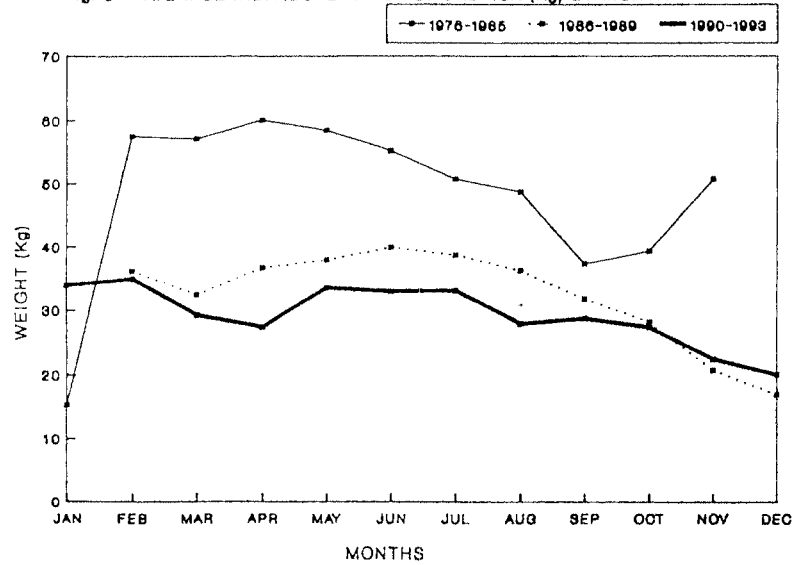
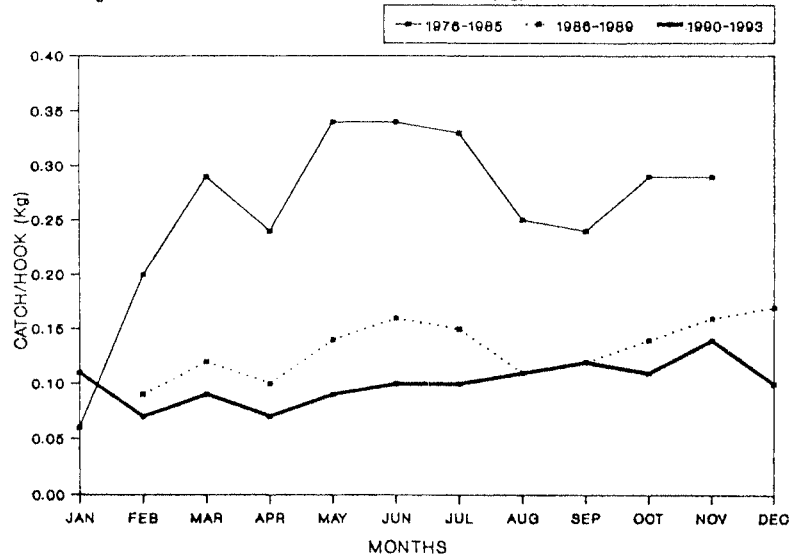


Fig. 7 PRODUCTIVITY - CATCH/HOOK (Kg) BY MONTH



Management Measures

The measures suggested in the previous reports were introduced by Legislative Act 273/90. The most important are:

- (a) The fishing licences to be issued in any year within and outside the territorial waters of Cyprus shall not exceed 60 for vessels fishing for Swordfish.
- (b) No licence for Swordfish fishing shall be issued to any vessel which is smaller than 9 meters and not equipped with a radiotelephone (V.H.F).
- (c) Swordfish fishing with any vessel in the territorial waters of the Republic during the period starting on the 1st October in any year and ending on the last day of February of the next year is prohibited.

These measures aim at a) the control of the fishing effort, b) the safety of fishermen and improvement of their fleet and c) the protection and conservation of Swordfish resources, but, as it was mentioned before in order to have results these measures and several others probably, should be introduced on a regional basis.