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CATCH AND EFFORT OF THE BLUEFIN TUNA PURSE SEINE FISHING IN SOUTH TYRRHENIAN AREA.

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The bluefin tuna fishing by purse seiners, in South Tyrrhenian, almost began during the years 1970-1971.

In the Tab. I are reported the annual size and tonnage class composition of the fleet engaged in this fishery while, in the successive Tab. II, are shown historical series of catch, effort and CPUE.

The effort (f) here considered is expressed as days at sea for each vessel engaged in fishing activities.

Catch and CPUE values show an increasing trend up to 1975. After this year a descending tendency in CPUE takes place, with the exception of some moderate recoveries during 1980 and 1983. At last this trend involved a strong decrease on fleet size, together with a sharp fall of catch and fishing effort.

These events seem not quite the exclusive effect of a comparable depauperation of tuna stocks or populations sustaining the seasonal migration in the south tyrrhenian breeding area.

By another part, observations performed during aerial surveys contributed to indicate a lower accessibility and catchability of tuna groups. In this respect, it is to be pointed out that a fast increase of pelagic gill-nets for swordfish fishing took place in the above considered area after 1975. It seems that the frequent impact of tuna tracks against these barriers involves at last marked troubles and changements on behaviour, shoaling and environmental allocations of fishes.

Setting an equilibrium curve

By utilizing the historical series of catch and effort data, we have made a first attempt to draw out a curve of equilibrium yield using the SCHAEFER (1954) model.

The linear regression of CPUE values plotted against effort (f) gave the parameters of the curve, traced out in Fig. 1. The maximum sustainable yield (MSY) resulted in 4.167 metric tons; that equals almost the yield values of purse seine tuna fishing during years 1975-1976-1977.

The optimal effort (opt.f) resulted in 1.667 days of fishing. This almost represents the double of the maximum effort practicised by the italian tuna purse seiners fleet operating in the south tyrrhenian area.

YEAR	TONNAGE CLASS 100-200 GRT	201-300 GRT	301-400 GRT	400+ GRT	Total (no.)
1971	6	-	-	-	6
1972	8	-	-	-	8
1973	12	-	-	-	12
1974	14	-	-	-	14
1975	14	-	-	-	14
1976	15	2	-	-	17
1977	15	6	-	1	22
1978	14	6	-	1	21
1979	13	6	-	2	21
1980	12	6	-	2	20
1981	12	6	-	2	20
1982	12	6	-	2	20
1983	13	6	-	2	21
1984	13	6	-	2	21
1985	13	6	-	2	21
1986	12	6	-	2	20
1987	11	4	-	2	17
1988	8	4	-	-	12

TAB. I - Size and tonnage composition of tuna purse seiners fleet during the years 1971 to 1988.

YEAR	CATCH (MT)	EFFORT (days)	CPUE (MT)
1972	1.020	184	5,54
1973	1.225	216	5,67
1974	3.120	490	6,37
1975	4.170	532	7,84
1976	4.120	646	6,38
1977	4.179	770	5,43
1978	2.100	525	4.00
1979	2.855	819	3,40
1980	3.361	580	5,84
1981	1.712	480	3,57
1982	2.182	780	2,80
1983	2.560	588	4,35
1984	2.476	798	3,10
1985	1.453	735	1,98
1986	1.082	600	1,80
1987	557	326	1,71
1988	334	264	1,27

TAB. II - Historical series of catch, effort and CPUE of the bluefin tuna fishing by purse seiners in South Tyrrhenian.

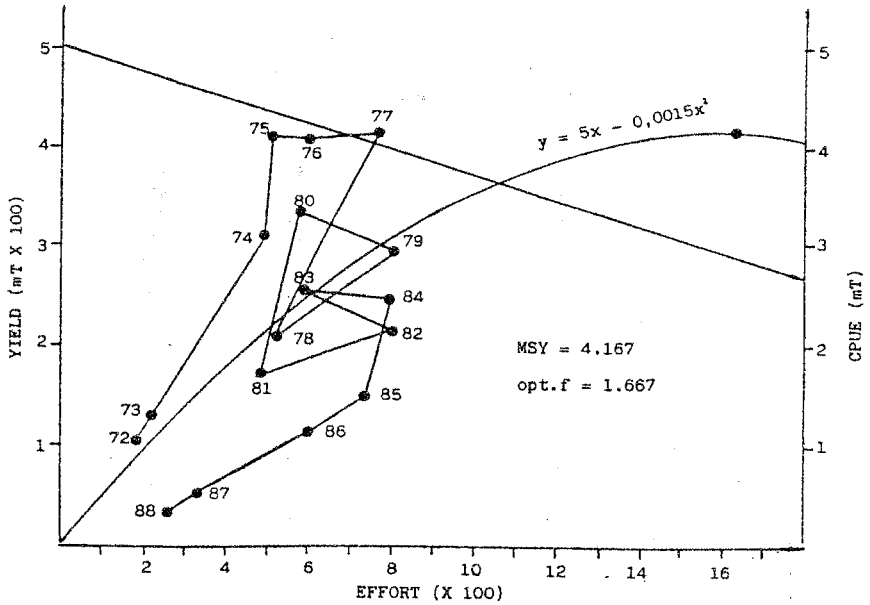

Fig. 1 - Yield and effort of purse seine tuna fishing in South Tyrrhenian during the years 1972 to 1988, and the SCHAEFER equilibrium curve.