



Some observations on the Spanish Squid (Illex and Loligo)
Fishery in Subárea 5 and Statistical Area 6 of the ICNAF.

by

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DESCRIPTION OF THE FISHERY

The Spanish fishery for Squid (Loligo and Illex) has developed recently. The first catches of a certain importance have been registered in 1969. In Table 1 the distribution of the number of vessels per category and per year is shown.

In Table 2 some data on the evolution of the fishing effort and of the catches for Illex and Loligo, are shown.

The catches of squid in this area are carried out by two directed fisheries, perfectly differentiated seasonally.

Loligo fishery is developed mainly from the months September-October until April-May, in depths ranging between 60 and 90 fathoms.

Illex fishery starts in May-April and ends in September-October. This fishery takes place approximately in the same areas

and depths than the Loligo one. For this fishery a decrease in the number of ships, mainly those of superior category, is observed in relation to the Loligo fishery. As a general rule we can assume that vessels with more than 500 GRT, leave the area when the Illex fishery starts.

SAMPLING

No biological sampling on those species has been carried out.

This paper deals with statistical information which we have obtained from three different sources:

a) General information facilitated by some private fishing companies, which contains catches of Loligo and Illex per month, as well as days of active fishing during the same. The selected sample obtained so from the fleet, refers mainly to category 5 vessels, which are the data presented here.

b) A more detailed one facilitated by some masters of the fishing vessels, who agreed to act as observers when fishing on the area, which contains

- Days of active fishing
- Catches of Loligo and Illex per day
- Data on species taken as by-catch of those fisheries

c) Statistical data, for the whole fleet, with total catches of Loligo and Illex and number of ships as well as their total GRT, per each year.

RESULTS

In figure 1 is shown (from the sample) the catch, in metric tons per day of active fishing and for each month, of Loligo and Illex through the years. It can be noticed the clear differences of seasonality for both fisheries.

In figure 2 the evolution of the c.p.u.e. (from the sample) in tons of Loligo and Squid per day of active fishing and for each year is shown. It does not seem to indicate any clear trend. The year 1974 has been only sampled until May.

In figure 3 is represented, from the statistical data, the c.p.u.e. for each year (Metric Tons/GRT), from 1969 to 1974 for Loligo. We have assumed for this, that all the vessels of the fleet fished the same time, each year. It has to be noted that in 1974, only the first part of the fishery's season for Loligo has been carried out, to quota regulation restrictions. This explains the sharp decrease of this value with respect to 1973, as we take as fishing effort unit the total GRT/year. With a rough estimate we could say that the fishing effort for this fishery has been equivalent to 13,625 GRT. So the value of the c.p.u.e. should be 0,67 Metric Tons/GRT, a increase with respect to 1973.

This increase in the c.p.u.e. could be attributed to a decrease in the number of predators.

For Illex (Fig. 4A) we have represented those values making the same assumptions than for Loligo. Since we assume that all the ships work the same time in the year, wich is not true for this fishery, it is possible that those values of fishing effort could be, at a some degree, overestimated. In Figure 4B, we have represented

the values of c.p.u.e. calculated, assuming that the vessels greater than 500 GRT, retire from the area when the fishing seasons for Illex starts. Real values must be in an intermediate position between those given.

In figure 5, are plotted the catches for Illex and Loligo against total effort of the fleet. (GRT/year). We have to notice the same than before for 1974 with respect to Loligo fishery, so we have assumed like before, that the effort for 1974 has been 13,625 GRT. For Illex we make the same reasoning than before, so those data on total effort for this fishery could be overestimated.

In figure 6 we represent those values for Illex, assuming that vessels greater than 500 TRB retire from the area, when this fishery starts. Like before we can say that the real values could be some where between the ones from figure 6 and figure 5B.

In tables 3 and 4 we give all the values used for the before calculations.

BY-CATCH

From data facilitated from the masters of the fishing vessels, we have been able to pick up some information on the by-catch for those fisheries. The information only refers to April, May, July, August, September, November, and December of 1973, and January and February of 1974.

The species taken incidentally as a by-catch in greater or smaller quantities are as follows: Mackarel, Silver hake, Red hake, Butterfish, Anglerfish, Lobsters, Halibut and others fished occasionally that we have not been able to identify through the

information obtained.

From those the first four constitute the bulk of the by-catch, being the others occasional or fished in small quantities.

In table 2 are shown, agreeing with the data taken from the sample, the tons per day of active fishing for Illex, Loligo, Mackarel, Silver hake, Red hake, Butterfish and mixed species, as well as the percentage with they represent in the total catch (Squid + by-catch) for each month. In the term "mixed species" we include all the other species as well as small quantities of red and silver hake when they are registered together without a criterium for their separation. It is also presented the percentage in weight of the by-catch as a whole, and its importance in tons per day of active fishing.

Following this and observing the data for Mackarel it can be seen that the catches for this species are null ^{June} ~~from May~~ ^{until} ~~September~~ September, having the maximum in March.
FROM May UNTIL

For Silver hake, catches are null from March till September (except April) with a maximum in December. 20

For Red hake, catches are null from April to August having the maximum in September.

Butterfish constitute the main species in the by-catch for both fisheries, having the maximum in September and the minimum values from February to August.

Catches of mixed species have their maximum in April and the minimum values from May to September, being the catches in December, January and February also scarce.

We can say as we observe from the data obtained from the

data obtained from the sample, that the by-catch as a whole represents a high percentage in March-April and September-November. In figure 3 it can be observed the relative importance of these catches in both fisheries.

We can conclude that the by-catch in the case of Illex fishery have a considerable less importance than the Loligo one.

Table 1

Distribution the number vessels per category and year

	<u>Cat. 4</u>	<u>Cat. 5</u>	<u>Cat. 6</u>	<u>Cat. 7</u>	<u>Total</u>
1969	-	3	-	-	3
1970	6	7	-	-	13
1971	4	7	2	-	13
1972	10	7	2	-	19
1973	17	9	6	1	33
1974	21	9	8	1	39

Table 2

Evolution of the fishing effort through the years (total GRT/year)

<u>Year</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
number vessels	3	13	13	19	33	39
GRT	1,667	6,300	9,001	10,821	22,816	27,250
GRT/vessel	555.7	484.6	692.4	569.5	691.4	705.1

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Table 3

Year	1969	1970	1971	1972	1973	1974	
Loligo	catch total	494	3.012	3.446	5.764	13.260	9.082
	C.p.u.e. (MT/GRT)	0.296	0.478	0.383	0.533	0.581	0.333
Illex	catch total	44	1.594	3.324	4.930	4.339	7.259
	C.p.u.e. (MT/GRT)	0.026	0.253	0.369	0.456	0.190	0.266

Table 4

Squid: Illex. Calculated only for vessels < 500 GRT

Year	1969	1970	1971	1972	1973	1974
Number vessels	0	6	4	11	18	22
GRT	0	2.256	1.862	4.637	6.822	8.542
C.p.u.e. (MT/GRT)	-	0.706	1.785	1.063	0.636	0.850

Table 5

Year		1973										1974	
Month		March	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Days fished (sample)		70	84	75	-	24	29	29	-	35	56	55	51
Loligo	%	33.34	27.62	5.70	-	12.67	47.82	28.34	-	55.36	69.36	68.02	75.70
	Tons/day	3.485	2.367	0.390	-	0.760	1.333	2.190	-	3.470	2.848	3.293	2.877
Illex	%	0.84	6.65	84.55	-	83.86	39.65	23.19	-	2.03	4.31	5.26	12.12
	Tons/day	0.078	0.570	5.785	-	5.032	1.105	1.792	-	0.127	0.177	0.256	0.460
Mackarel	%	18.75	0.70	0	-	0	0	0	-	3.28	0	1.20	4.85
	Tons/day	1.750	0.060	0	-	0	0	0	-	0.206	0	0.058	0.184
Silver hake	%	0	2.10	0	-	0	0	0	-	2.11	4.09	0.03	0.26
	Tons/day	0	0.180	0	-	0	0	0	-	0.132	0.168	0.002	0.010
Red hake	%	1.50	0	0.57	-	0	0	5.81	-	2.23	3.83	0.69	1.14
	Tons/day	0.140	0	0.039	-	0	0	0.449	-	0.140	0.157	0.033	0.043
Butterfish	%	5.85	7.00	7.89	-	1.05	9.76	38.28	-	17.79	11.44	18.33	3.15
	Tons/day	0.546	0.600	0.540	-	0.063	0.272	2.958	-	1.114	0.470	0.887	0.120
Mixed species	%	39.24	55.06	3.95	-	1.82	2.56	4.80	-	17.19	6.98	6.46	2.79
	Tons/day	3.662	4.719	0.270	-	0.109	0.071	0.371	-	1.077	0.287	0.313	0.106
Total by-catch	%	65.34	64.86	12.41	-	2.87	12.32	48.89	-	42.60	26.30	26.91	12.19
	Tons/day	6.098	5.559	0.849	-	0.172	0.343	3.778	-	2.669	1.089	1.290	0.462

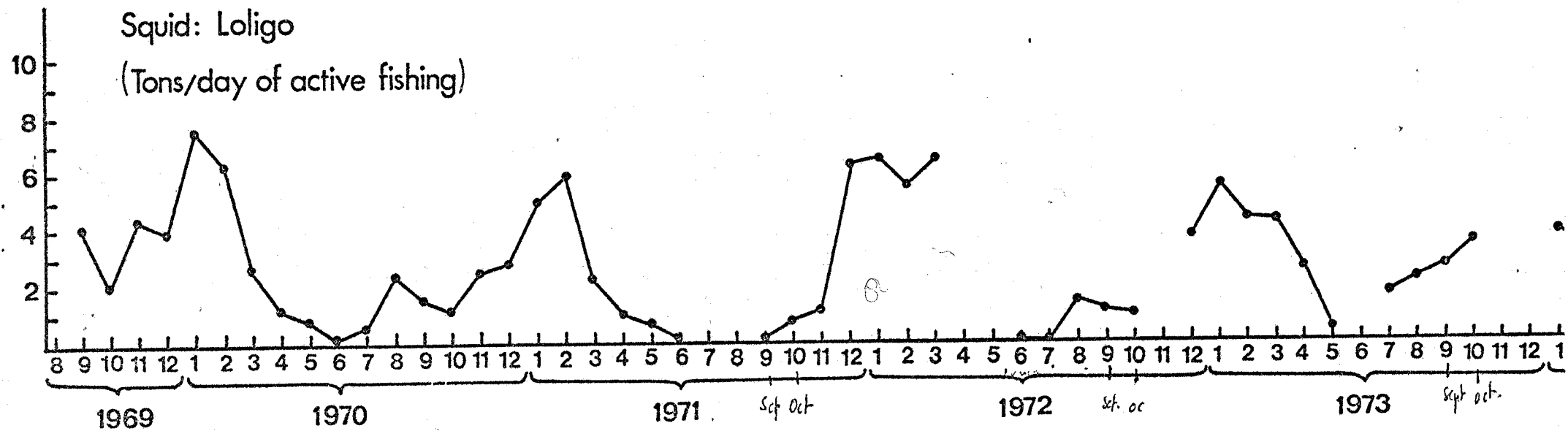
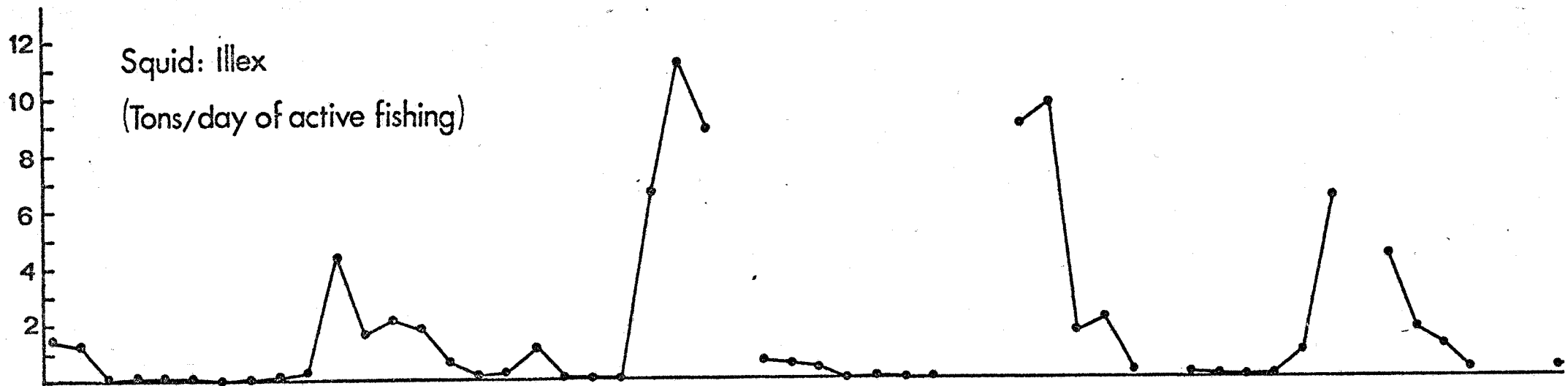


Figure 1.- C.P.U.E. per month. (sample)

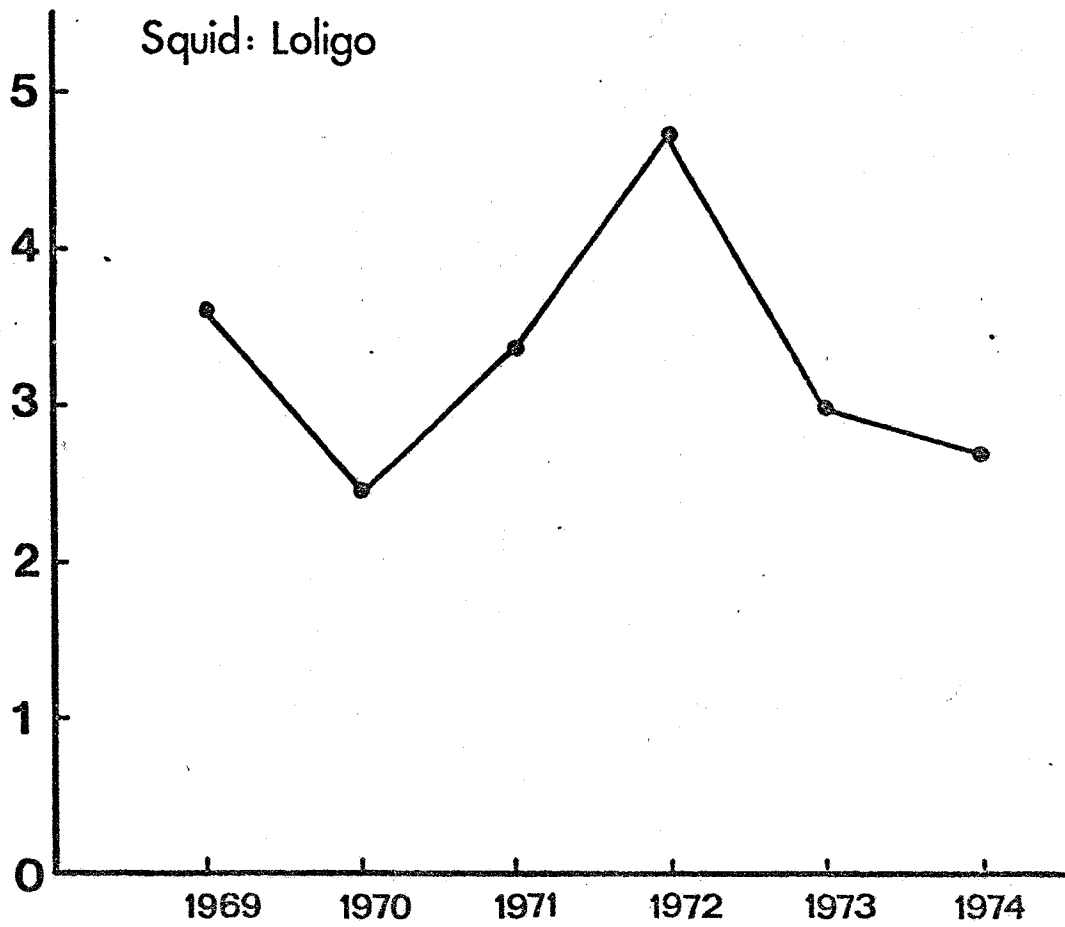
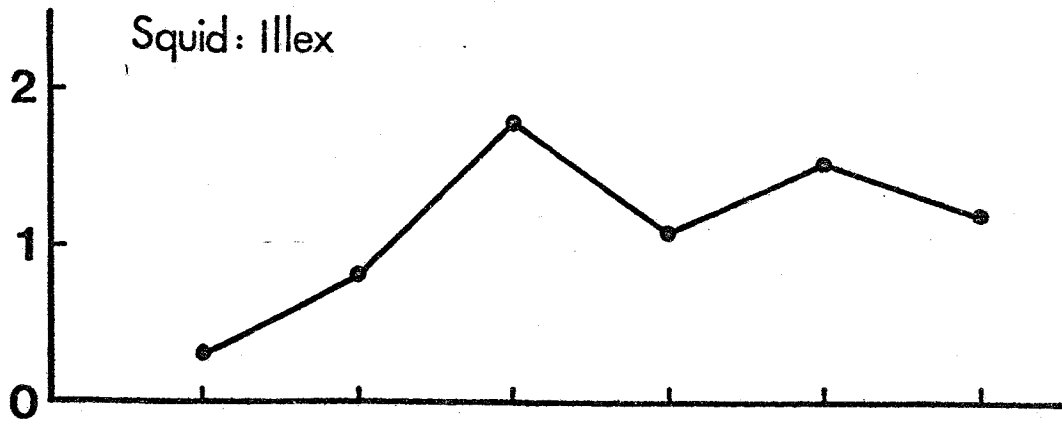


Figure 2 -- C.P.U.E. For each year (sample)
(Tons/day of active fishing)

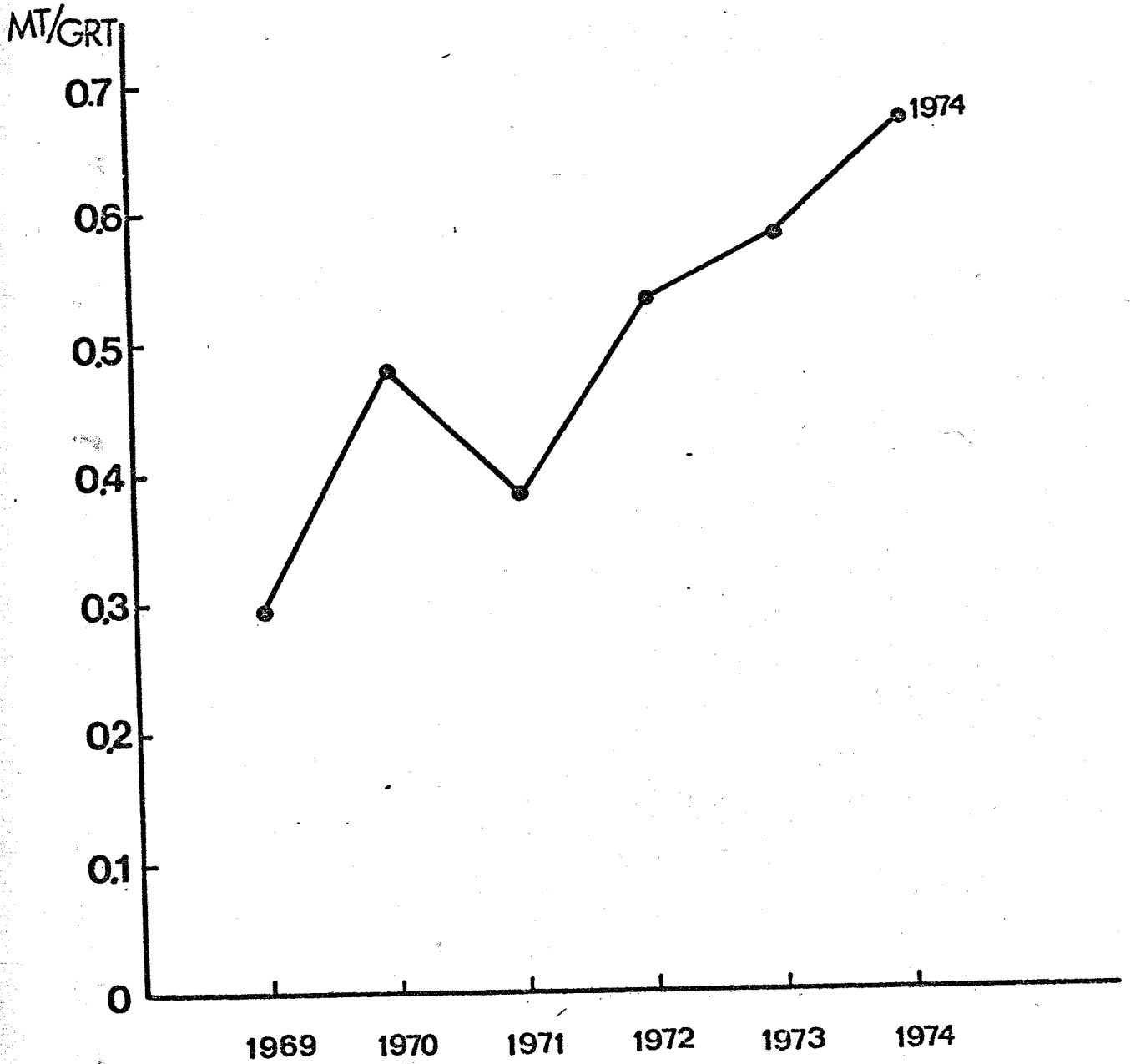


Figure 3.- Squid: Loligo C.P.U.E. (Metric Tons/GRT) for each year (from the statistics).

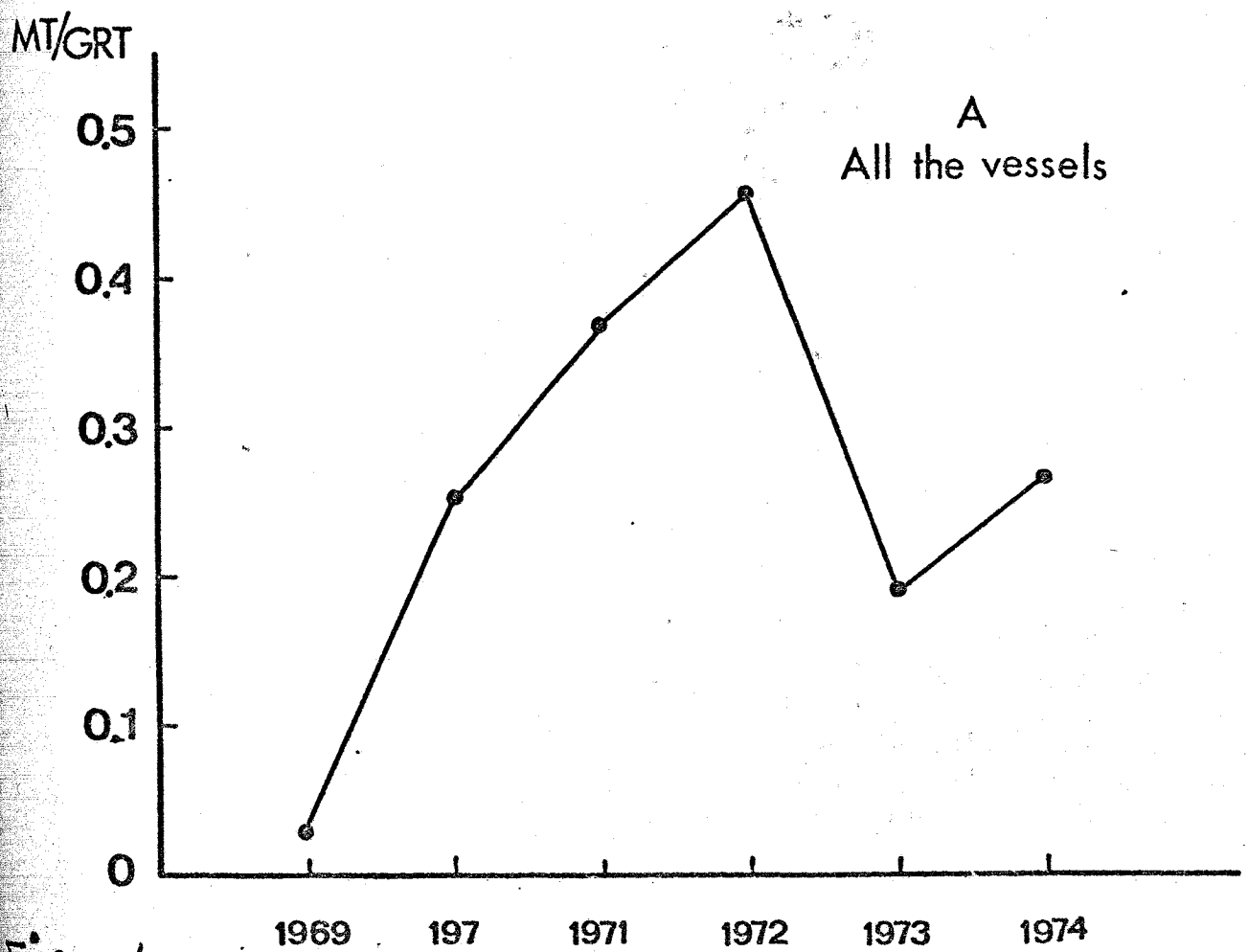
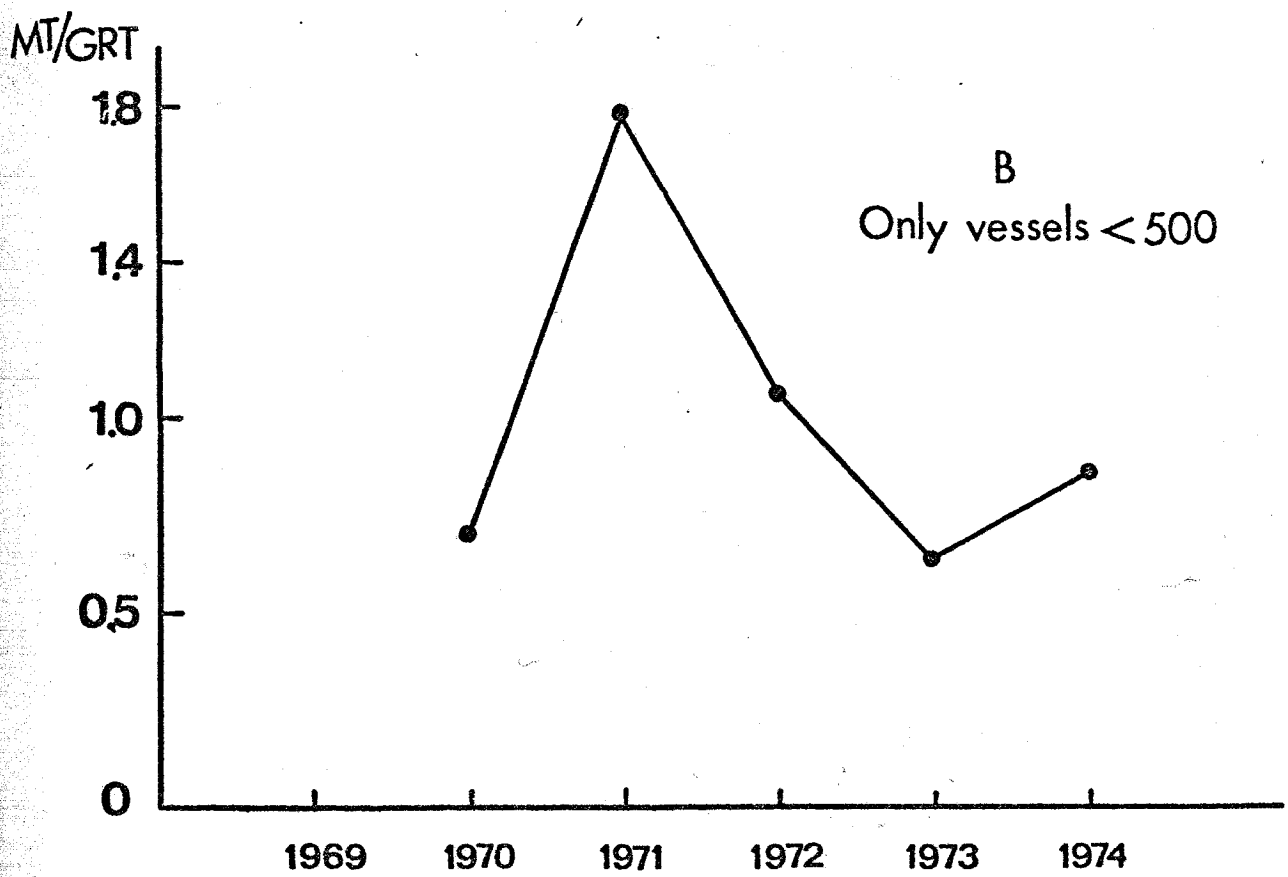


FIG.- 4

$\times 10^3 \text{ MT}$

8

6

4

2

0

Squid: Illex

1969

1970

1971

1972

1973

1974

B

5

10

15

20

25

30 $\times 1$

$\times 10^3 \text{ MT}$

14

12

10

8

6

4

2

0

Squid: Loligo

1969

1970

1971

1972

1974

1973

A

5

10

15

20

25

30 $\times 10^3 \text{ GRT}$

5

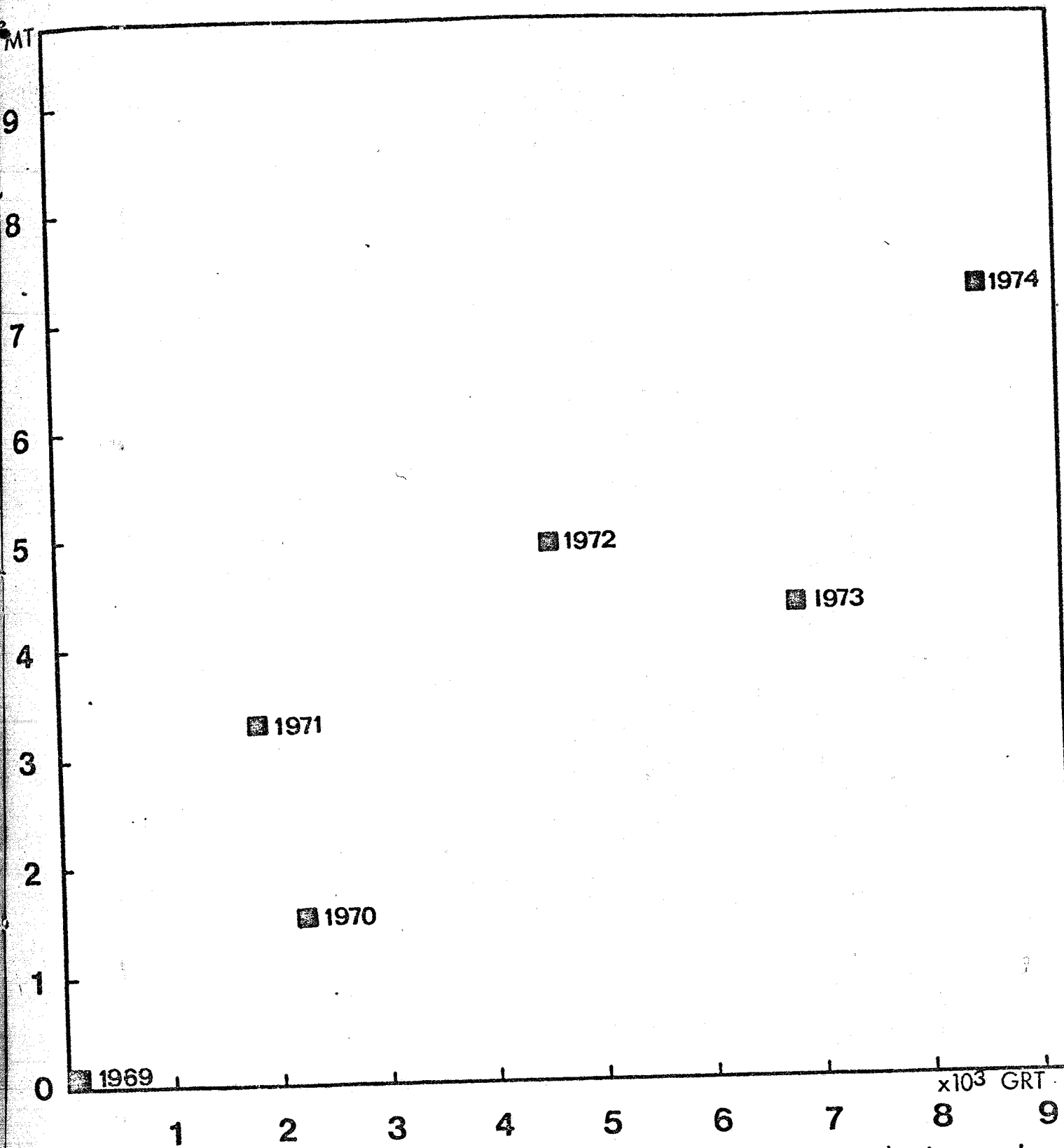


Figure 6.— Squid: Illex. Total catch plotted against effort (GRT/YEAR) taking only vessels < 500 GRT.

