

## Aspects of Cephalopod fishery in the Ligurian Sea

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**RESUME:** On réfère les données sur les Céphalopodes pêchés par 108 bateaux de Camogli et Imperia (Mer Ligure) pendant les années 1980 - 1981. Les espèces plus abondantes sont Octopus vulgaris, Eledone cirrhosa et Loligo vulgaris.

**SUMMARY:** In the years 1980 - 1981 Cephalopod landings by 108 fishing boats from Camogli and Imperia (Ligurian Sea) totaled 428 q, nearly 4,8% of whole production of the sample examined. Octopus vulgaris, Eledone cirrhosa and Loligo vulgaris are the species most represented in the catches.

**INTRODUCTION** - During the last meeting of the Working Group on the Cephalopods (C.I.E.S.M., Banyuls; november, 1981), the problem of quantitative analysis of Cephalopod small-scale fishery has been discussed and an integration has been suggested for the official statistics, with more detailed information regarding comprehensive activities in a definite area. The present work is a contribution to face the problem in this direction.

**DATA BASE** - In Liguria many fishermen are organized in cooperative societies for the sale of their product. The daily entry of landings generally reports for each boat: the date, the amount detailed for species, with precision of 0.1 Kg, and its respective price. Also the unsold quantities are recorded that are purchased by cooperative. These data form the basis of present investigation. During the years 1980 - 1981 the activity of 108 fishing boats has been investigated, nearly 12% of the fishing fleet operating in the examined areas (LEVI, 1982) lying between Genova and Punta Mesco, Isola di Gallinara and Capo Mortola, nearly 20-500 m depth (fig. 1). The species of Cephalopods were classified by fishermen in several groups, each containing also more than one species: Group Octopus: O. vulgaris, O. salutii. Group Sepia: S. officinalis, S. orbignyana, S. elegans. Group Loligo: L. vulgaris, Alloteuthis sp., Group Todarodes: T. sagittatus, Illex coindetii. Eledone cirrhosa. Eledone moschata. Group "Others": Sepietta sp., Rossia macrosoma, Neorossia caroli, Sepiola sp., others. The same type of classification has been maintained for the treatment of data (Tab. 3).

**RESULTS** - There are no definite dividing lines between small and industrial operators yet both the fishery structure and its activity, i.e. the monthly mean of days at sea may discriminate industrial fisheries from the activities which are not carried out on a professional scale (small-scale

fishery). As shown in tab. 1 - 2 the studied sample is included in a small-scale fishery. Mean displacement of boats varies between 2.39 and 28 metric tons and from 16% to 42% of the examined boats have fished no more than 10 days per month.

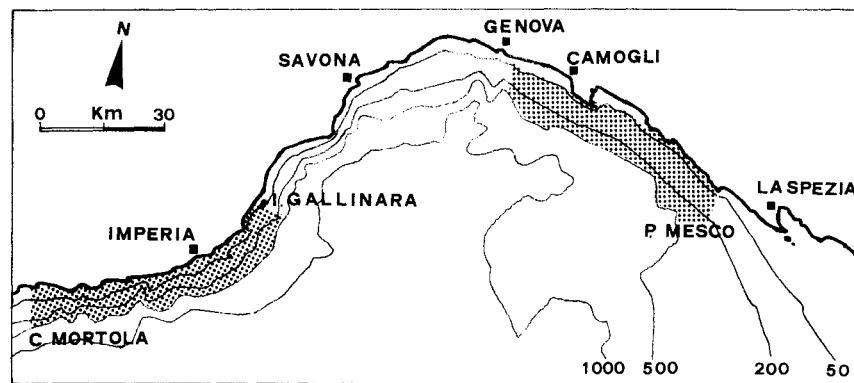


Fig. 1: Approximate fishing areas of boats from Camogli and Imperia.

FISHING METHODS	CAMOGLI			IMPERIA		
	L	T	HP	L	T	HP
Trawl	14.1	20.7	142.5	17.5	28.0	163.3
Lampara net	7.3	3.2	49.4	-	-	-
Gillnet	6.1	2.4	22.1	10.2	6.3	53.3
"Other methods"	11.5	8.2	94.0	18.4	27.9	145.0

Tab. 1: Data on fishing boats classified for the gears operated and for the landing point. L) Mean length, in m. T) Mean displacement, in metric tons. HP) Mean power, in horsepower.

L. point	years	days at sea					
		1-5	6-10	11-15	16-10	21-25	26-30
CAMOGLI	1980	42.7	18.3	17.0	9.0	6.7	6.3
	1981	38.1	16.2	17.4	12.8	13.6	1.9
IMPERIA	1980	25.6	32.1	20.8	17.3	4.2	
	1981	35.1	28.4	16.1	12.6	7.7	

Tab. 2: Percentage of fishing boats classified for number of days at sea (monthly mean).

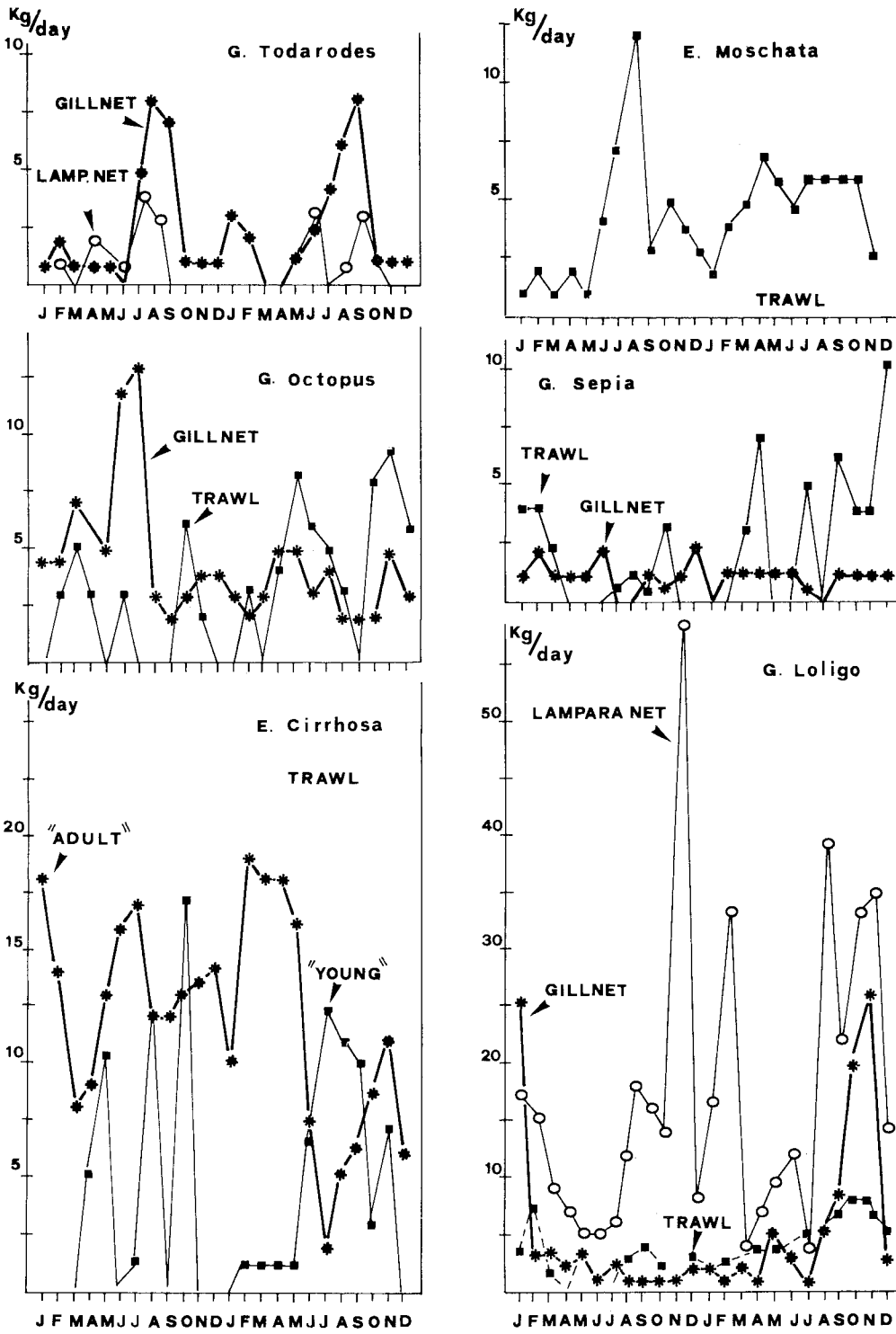


Fig. 2: Camogli 1980 - 1981. Monthly mean catch rates (Kg/day), fluctuations of six groups of Cephalopods by different methods of fishing.

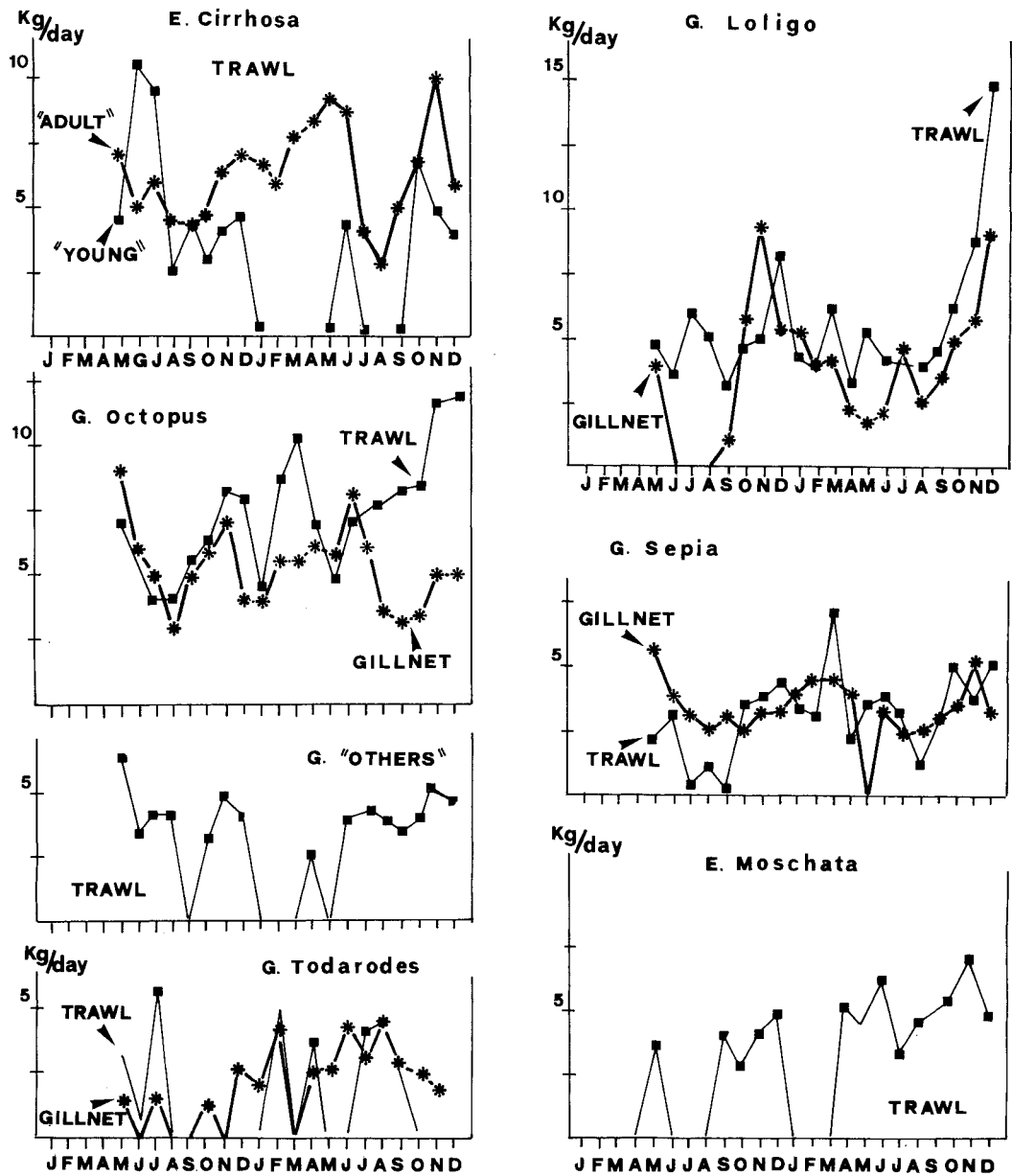


Fig. 3: Imperia 1980 - 1981. Monthly mean catch rates (Kg/day), fluctuations of seven groups of Cephalopods by different methods of fishing.

Cephalopod landings in the period 1980 - 1981 totaled 42,882 Kg, of which 28,169 Kg were caught by 64 fishing boats from Camogli and 14,713 Kg were landed by 44 fishing boats from Imperia.

The contribution of each species to the percentage composition of the Cephalopod landings and of the total catches (including fishes and crustaceans) is given in Tab. 3. The monthly mean catch rate fluctuations by different fishing methods can be observed in Fig. 2 and 3.

## CAMOGLI JAN. 1980 - DEC. 1981

Fishing methods N. of F. boats	Gillnet			Trawl			Lampara net			others			TOTALS		
	59			1			3			1			64		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
G. <u>Octopus</u>	5450	64.0	5.3	335	5.0	1.4	19	0.1	-	22	7.4	-	5826	20.7	0.9
G. <u>Loligo</u>	2075	24.4	2.0	1117	16.9	4.7	12556	98.5	2.6	236	79.5	0.5	15984	56.7	2.5
G. <u>Todarodes</u>	650	7.6	0.6	14	-	-	119	1.6	-	34	11.4	0.1	817	2.9	0.1
G. <u>Sepia</u>	250	2.9	0.2	316	0.2	1.3	34	0.3	-	3	1.0	-	603	2.1	-
<u>E. cirrhosa</u>	38	0.4	-	3253	49.1	13.6	16	0.1	-	2	0.7	-	3309	11.7	0.5
<u>E. cirrhosa (J.)</u>	44	0.5	-	1137	17.1	4.7							1181	4.2	0.2
<u>E. moschata</u>				444	6.7	1.8							444	1.6	-
G. "Others"				5	-	-							5	-	-
Totals	8507	100	8.1	6621	100	27.5	12744	100	2.6	297	100	0.6	28169	100	4.3

## IMPERIA MAY 1980 - DEC. 1981

Fishing methods N. of F. boats	Gillnet			Trawl			TOTALS		
	42			2			44		
	A	B	C	A	B	C	A	B	C
G. <u>Octopus</u>	4273	67.2	3.6	2657	31.8	3.0	6930	47.1	2.4
G. <u>Loligo</u>	700	11.0	0.6	1493	17.9	1.7	2193	15.0	0.8
G. <u>Todarodes</u>	88	1.4	-	49	0.6	-	137	0.9	-
G. <u>Sepia</u>	1254	19.7	1.0	382	4.6	0.4	1636	11.1	0.6
<u>E. cirrhosa</u>	26	0.4	-	2521	30.2	2.9	2547	17.3	0.9
<u>E. cirrhosa (J.)</u>				100	1.2	0.1	100	0.7	-
<u>E. moschata</u>				499	5.9	0.6	499	3.4	0.1
G. "Others"	17	0.3	-	654	7.8	0.7	671	4.6	0.2
Totals	6358	100	5.2	8355	100	9.4	14713	100	5.1

Tab. 3: Camogli and Imperia, 1980 - 1981. Cephalopod landings in Kg (A), the respective percentage as to the Cephalopod catches (B) and to the total catches (C), for different fishing methods. Last three columns: the total A, B, C for fishing area. The last row: the total A, B, C for different fishing methods.

**DISCUSSION** - The results point out the following remarks.

- The data base is reliable and detailed when the wholesale trade of landings is managed by cooperative and no member sales by himself or through the wholesalers. At present this is the situation of the 12% of the boats operating in the studied zones and the 32% of the vessels landing their catches in Camogli and Imperia fishing ports.

- The landings correspond to the catches for the species of high market value, as the Cephalopods.

- Bouchereau et al. (1981) have observed that the number of days at sea is a unit of effort to compute the CPUE in trawling and seining. From this point of view the graphs of figure 2 and 3 show the fluctuations of CPUE. This computation points out several weaknesses through the great number of gears operated in gillnetting and multi purpose fishing.

- The percentage composition of Cephalopod catches is quite different in the examined areas either for the different fishing methods or considering the total Cephalopod landings (columns B, Tab. 3). In particular for trawlers which fish mainly on E.cirrrosa (more than 60%) in the Camogli area, where until 19 kg/day monthly mean catch rates are recorded (Fig. 2). While in the Imperia area the group Octopus and E.cirrrosa are represented in the same percentage (nearly 31%, Tab. 3; until 15kg/day, Fig. 3).

Here we must observe that the size dividing the "young" and the "adult" specimens of E.cirrrosa is nearly 50 mm dorsal mantle length (D.M.L.). It is possible that the 40-60 mm D.M.L. sized specimens have been placed in either class. A better precision has been noted in the late spring trawl landings, where nearly 20 mm D.M.L. sized specimens are recorded separately for their high market value (Fig. 2).

Also the percentage of the Cephalopods in the total catches (including fishes and crustaceans) (columns C, Tab. 3) by gillnet and trawl points out the weight of the Cephalopods in the Camogli landings.

- The fishing with surrounding nets and light is little developed in the Imperia area and it is not present in our sample; on the contrary the pelagic catches are nearly 73% of the total landings in Camogli. The group Loligo forms the 2.6% of this quota and more than 98% of Cephalopods fished by lampara net. Loligo vulgaris becomes the "target" species (until 59 kg/day, Fig. 2) in winter months when the spawners approach the coast (Mangold-Wirz), 1961-63).

- The Camogli and Imperia fishermen fish mainly on four groups of species: G. Octopus, G. Loligo, G. Sepia and E. cirrhosa, even if for the low catch rates (Fig. 2-3) it must be considered a non-specialized Cephalopod fishing.

**BIBLIOGRAPHY**

- BOUCHEREAU, J.L., DALOUCHE, F. and TOMASINI, Y.A., 1981. Détermination de une unité d'effort pour les flottilles de chalutiers et de senneurs opérant à Oran, Algérie. F.A.O. Fish. Rep. , (263): 61-68.
- LEVI, D., 1982. Summary outline of main Italian Fisheries Sub-areas 37.3 and 37.5. F.A.O. Fish. Rep., (266): 49-54.
- MANGOLD-WIRZ, K., 1961. La migration des Céphalopodes méditerranéus. Rapp. Commer. int. Mer Médit., 16(2): 299-304.
- MANGOLD-WIRZ, K., 1963. Biologie des Céphalopodes benthiques et nectoniques de la mer catalane. Vie Milieu (suppl.) 13: 1-285.

