

PRELIMINARY DATA ON THE BATHYMETRIC DISTRIBUTION OF CEPHALOPODS IN THE NORTHERN ALBORAN SEA

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Abstract

The results of three trawl surveys carried out from 1994 to 1996 in the Alboran sea are analysed. A total of 26 cephalopod species were found between 30 and 790 m of depth. Cephalopods make up about 8 % of the catch. *Octopus vulgaris* and *Alloteuthis* spp. were the most abundant species in the area.

Key-words: Demersal, cephalopods, Biogeography, Trawl surveys, Alboran Sea

Introduction.

The Cephalopods are well known in the Mediterranean, as can be seen from general articles about this taxonomic group (1-3) and about its geographic and bathymetric distribution (4-10). However, there are certain areas, like the Alboran sea, where such studies are lacking. The aim of this article is to improve the knowledge of this important animal group in this particular area.

Material and methods.

The Cephalopods taken in this study were collected during three bottom trawl surveys in the Spanish Alboran sea in October 1994, 1995 and 1996 (Fig. 1), within the research programme "Demersal fishing of the Spanish Mediterranean" financed by the Ministerio de Agricultura y Pesca. A total of 98 bottom trawl hauls were carried out on the research vessel *Francisco de Paula Navarro*, between 36 and 790 m of depth. Each haul consisted of one half hour of effective trawling carried out during day-light hours.

For this study we have used 82 hauls made with the commercial bottom trawl gear named "baka". For the cephalopod study, the area was divided in five bathymetric strata: A=30-100 m (28 hauls), B=100-200 m (16 hauls), C=200-300 m (13 hauls), D=300-400 m (13 hauls) and E=400-800 m (12 hauls). The abundance and biomass index were standardised to one hour of trawling. Further details of the sampling procedure are given in Gil de Sola (11).

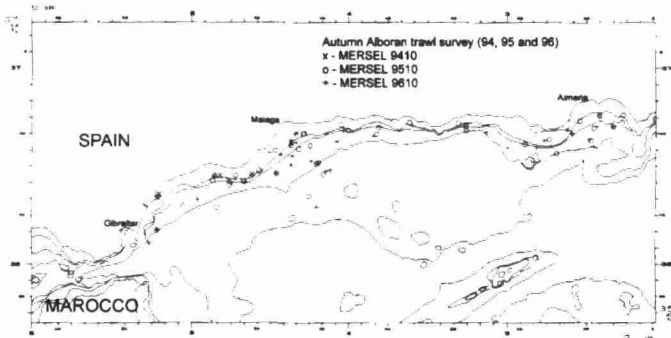


Figure 1. Location of the samples in the study area.

Results and discussion.

Cephalopods appear in 80 of the 82 hauls made. A total of 26 species were caught (Table I) corresponding to 452 kg and 69.868 specimens. The cephalopods were 8% of the total catch in weight (Fig. 2). This percentage is lower than in other Mediterranean zones: in the northern Tyrrhenian Sea cephalopods represented 9-17 % of the total commercial catches, in the lower Adriatic Sea cephalopods reach about 20 % of the catch and in the Ionian Sea they make up about 17 % of the commercial catch. *Rondeletiola minor*, *Sepietta oweniana*, *Alloteuthis media* and *Sepia elegans* were the most occurrence species, and *Sepia officinalis*, *Onychoteuthis banksii*, *Heteroteuthis dispar*, *Histioteuthis reversa* and *Ancistroteuthis lichtensteinii* have appeared only in one haul. This is not surprising since *S. officinalis* have a lower catch in the bottom trawl fishing than with other types of gear (12), and the others are oceanic species (6).

The more coastal cephalopods are represented by *Sepiola intermedia*, confined within the first stratum, *Loligo vulgaris*, caught at 97.4% in stratum A, *Scaevurgus unicirrhus* and *Octopus vulgaris*. *A. media*, *S. elegans*, *Alloteuthis subulata*, *Eledone moschata*, *Todaropsis eblanae*, *Illex coindetii*, *Eledone cirrhosa*, *Octopus salutii*, *Brachioteuthis riisei*, *Rossia macrosoma*, *S. oweniana* and *R. minor* are species with

Table 1. Cephalopod specimens of the bottom trawl survey MERSEL 94, 95 and 96. D. min.: minimum depth; D. max.: maximum depth; Freq.: frequency of appearance for each species.

	D. min (m)	D. max (m)	Freq. (%)
<i>Sepiola intermedia</i>	36	74	4.9
<i>Octopus vulgaris</i>	36	217	48.8
<i>Sepia elegans</i>	36	245	58.5
<i>Alloteuthis subulata</i>	36	250	47.6
<i>Eledone moschata</i>	36	304	43.9
<i>Illex coindetii</i>	36	314	31.7
<i>Eledone cirrhosa</i>	36	341	51.2
<i>Alloteuthis media</i>	36	341	61.0
<i>Loligo vulgaris</i>	42	146	14.6
<i>Brachioteuthis riisei</i>	59	475	4.9
<i>Rossia macrosoma</i>	60	423	13.4
<i>Sepietta oweniana</i>	62	477	61.0
<i>Sepia officinalis</i>	63	63	1.2
<i>Rondeletiola minor</i>	63	477	62.2
<i>Sepia orbignyana</i>	70	423	30.5
<i>Todaropsis eblanae</i>	75	351	15.9
<i>Octopus salutii</i>	85	341	14.6
<i>Scaevurgus unicirrhus</i>	94	138	2.4
<i>Todarodes sagittatus</i>	191	714	18.3
<i>Abralia veranyi</i>	239	341	6.1
<i>Bathypolypus sponsalis</i>	239	790	13.4
<i>Onychoteuthis banksii</i>	241	241	1.2
<i>Neorossia caroli</i>	304	614	13.4
<i>Heteroteuthis dispar</i>	423	423	1.2
<i>Histioteuthis reversa</i>	447	447	1.2
<i>Ancistroteuthis lichtensteinii</i>	714	714	1.2

a wide distribution range, from continental shelf to middle slope. The first six species were more frequently captured between 30-200 m depth, *I. coindetii* between 100-200 m and *E. cirrhosa* was more abundant from 100 to 300 m of depth. *Todarodes sagittatus*, *Abralia veranyi*, *Bathypolypus sponsalis* and *Neorossia caroli* are the most bathyal species.

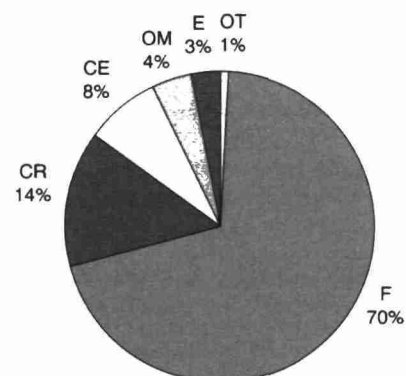


Figure 2. Mean value of the catch composition expressed in percentage. F= fishes; CR = crustaceans; CE = cephalopods; OM = other molluscs; EC = echinoderms, OT = others.