Oceanic cephalopods from western Canary Islands collected during CETOBAPH mesopelagic survey: distribution and biodiversity.

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INTRODUCTION

Oceanic cephalopods, especially squids, are one of the main animals in oceanic ecosystems and constitute a key group in marine food webs. Despite of their importance a small number of research cruises targeting on this group have been conducted in the Canary Islands. We report herein on the micronektonic component of the pelagic assemblage in the Canary region.

MATERIAL AND METHODS

During April 2012, the R/V "*Cornide de Saavedra*" carried out thirty trawl with a commercial midwater trawl. Sampling was directed to Deep Scattering Layer (DSL) during diurnal and nocturnal and migrant Surface Scattering Layer (SSL) during nocturnal period, in three Canary Islands (El Hierro, La Palma and Tenerife), at range depths of 50 to 900 m. All trawls were fixed to a one hour of duration. Acoustic backscatter was measured with a Simrad EK60 echo-sounder at 18 kHz (Figure 1).

Diversity was assessed based on the species richness observed, Shannon-Weaver and Simpson diversity indices.

Differences in cephalopods assemblage structure between DSL, SSL and the three islands was analysed through hierarchical agglomerative and unweighted pair group method with arithmetic average (UPGMA) clustering by calculating Euclidean distance matrix between hauls after Log (n) transformation of the initial data. Analysis of similarities (ANOSIM) routine was used to test for differences in *a priori* selected groups (DSL, SSL and islands)(Figure 2).

RESULTS AND DISCUSSION

•A total of 3717 specimens belonging to seventeen families including two octopods, one sepiolid, one spirulid and thirty four squids species were caught. Four dominant species were found in all sampled layers. These were represented by actively diel vertical migratory species (DVM) as *P. margaritifera*, *A. moriisi*, *O. banksii* and *P. giardi* that comprised the 91% of the total number of cephalopods caught (Table 1). The diversity index were similar for the tree islands sampled (Table 2).

•The dendrogram obtained shown three cephalopods assemblages. The ANOSIM routine showed that the only significant differences (R: 0,77 Sig.: 0.0009) were due to the differences in the depth of acoustic backscatter layer sampled (DSL/SSL).

•The presence of both, no migrant and semi-migrant species and its low number, characterized the trawls performed over the DSL. On the contrary, the SSL was characterized by the high dominance of DVM species.

•This study provide a good description of the micronektonic cephalopods community assemblage of the Canary Islands. However, the importance of large pelagic species could be infraestimated by the sampling methodology used. In this sense more deep studies are necessaries.

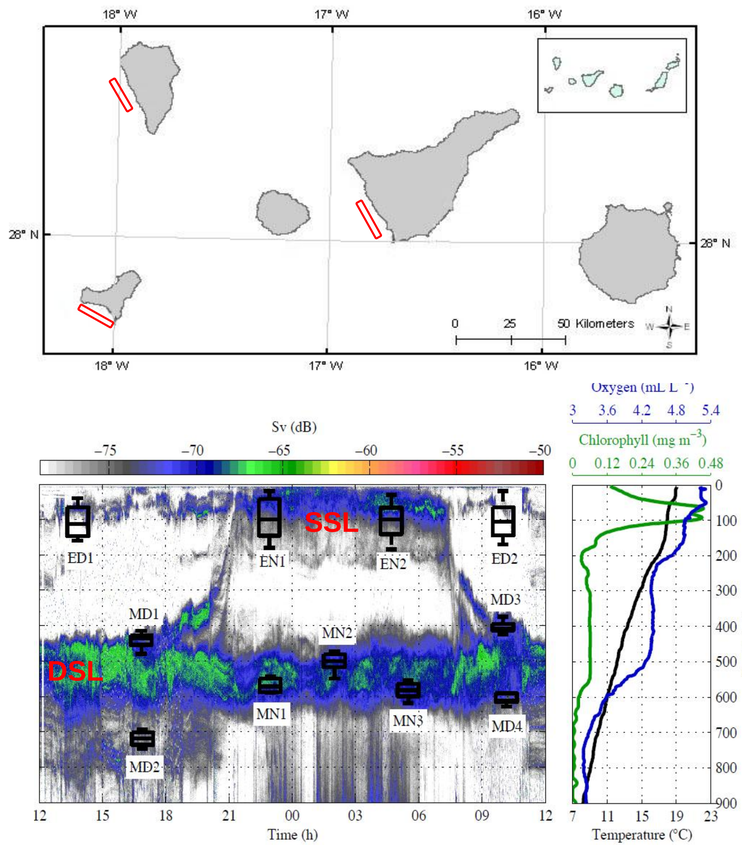

Figure 1: Sampled areas (red box) and example of echogram and sampling design over DSL and SSL. Chlorophyll , oxygen and temperature vertical profiles. Box-plot represent hauls depths and duration.

Family	Species	Number	Freq.%
Ancistrocheiridae	*Ancistrocheirus lesueurii*	1	0.03
Argonautidae	*Argonauta argo*	1	0.03
Brachioteuthidae	*Brachioteuthis riisei*	8	0.22
	Brachioteuthis picta	2	0.05
	Brachioteuthis spp.	4	0.11
Bolitaeninae	*Japetella diaphana*	2	0.05
Chiroteuthidae	*Chiroteuthis spp.*	2	0.05
	Chiroteuthis mega	1	0.03
	Chiroteuthis verany verany	2	0.05
Chtenopterygidae	*Chtenopteryx spp.*	4	0.11
	Chtenopteryx canariensis	2	0.05
	Chtenopteryx sicula	55	1.48
Cranchiidae	*Cranchia scabra*	10	0.27
	Leachia atlantica	14	0.38
	Liocranchia reinhartdi	2	0.05
	Megalocranchia oceanica	24	0.65
	Taonius pavo	3	0.08
	Bathothauma lyromna	2	0.05
	Helicocranchia pfefferi	2	0.05
Eneploteuthidae	*Abraliopsis moriisi*	1119	30.10
	Abralia cf verany	1	0.03
	Enoploteuthis anapsis anapsis	10	0.27
	Enoploteuthis spp.	7	0.19
Histioteuthidae	*Histioteuthis cf c. celetaria*	3	0.08
	Histioteuthis corona corona	19	0.51
	Histioteuthis meleagroteuthis	14	0.38
	Histioteuthis reversa	1	0.03
	Histioteuthis spp.	10	0.27
	Stigmatoteuthis arcturi	9	0.24
Lycoteuthidae	*Selenoteuthis scintillans*	3	0.08
	Lampadioteuthis megaleia	5	0.13
Mastigoteuthidae	*Mastigoteuthis hjorti*	18	0.48
	Mastigoteuthis cf magna	2	0.05
	Mastigoteuthis spp.	7	0.19
Octopoteuthidae	*Octopoteuthis sp. new*	3	0.08
	Octopoteuthis sicula	1	0.03
Ommastrephidae	*Todarodes sagittatus*	25	0.67
	Ommastrephes bartrami	1	0.03
	Ommastrephidae	3	0.08
Onychoteuthidae	*Onychoteuthis banksii*	407	10.95
Pyroteuthidae	*Pterygioteuthis giardi*	427	11.49
	Pyroteuthis margaritifera	1445	38.88
	Pterygioteuthis spp.	3	0.08
Sepiolidae	*Heteroteuthis dispar*	32	0.86
Spirulidae	*Spirula spirula*	2	0.05

Table 1: Cephalopod species caught during the CETOBAPH survey .

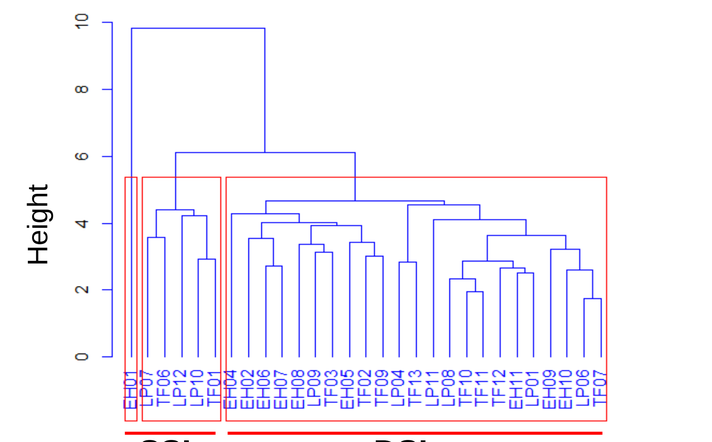

Figure 2: Cluster dendrogram showing similarities based on the composition and abundance of cephalopods species.

Island	Shannon-Weaver index	Simpson index	Richness
El Hierro	1,34	0,653	32
La Palma	1,77	0,747	30
Tenerife	1,61	0,645	31

Table 2: diversity index and species richness.

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