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Results of Exploratory Deep-sea Fishing Survey in the Galician Bank: Biological Aspects on Some
of Seamount-associated Fish (ICES Division IXb)

by

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Abstract

Since October 1998 to October 1999 an experimental survey, comprising 12 monthly fishing trips were carried out in Galician Bank (ICES Divisions IXb) by two commercial trawlers of the Spanish fleet. The aims of this survey were to explore the fishing resources of studied area and to know the species community associated to this seamount.

A total of 297 valid hauls were made during 309 hours of fishing and yielded a total catch of 45 145 kg in the depth strata studied (650-1200 m). The community of species in the area prospected presented high species richness. A total of 106 species were made up of 70 teleosts, 11 sharks, 3 rays, 2 chimaeras, 11 crustacea, 6 molluscs and 3 equinoderms

The most important species captured were teleosts: *H. mediterraneus*, *M. moro*, *L. eques*, *A. bairdii*, *E. telescopus*, *T. cristulata* and *L. piscatorius*, followed for deep sharks: *D. licha*, *D. calceus* and crustacean: *Ch affinis*. The yields obtained for the whole series of fishing trips were low being the values obtained by order of importance: 30.3, 14.0, 13.1, 11.7, 4.8, 4.2, 2.5 kg/h and 1 kg/h for the teleosts; 2.0, 1.7, kg/h for sharks and 1.2 kg/h for crustacean. The results indicate, in general, there were no differences in depth distribution of the species characterised by the presence or absence of certain species and also, a seasonal variation in the abundance of the most important caught.

Introduction

Galician Bank is a seamount which lies 120 miles off the Northwest coast of NW of Spain and has its summit at 500 m water depth. It is approximately 1500 m long with very steep eastern slope of bare rock. The west slope levels out at about 800 m to an extensive sandy plateau with speed currents. This seamount and its ichthyofauna are not well known since the Spanish fishing activity has been limited.

Since October 1998 to October 1999 a experimental survey, comprising 12 monthly fishing trips, was carried out in Galician Bank (ICES Divisions IXb) by two commercial trawlers from the Spanish fleet. The aims of this survey were to explore the fishing resources of the studied area and to know the species community associated to this seamount.

Material and Methods

The study area was sampled according to a random stratified design. The area, was divided in three sectors, A (11°31'-11°40' W), B (11°40'-11°49' W) and C (11°49'-11°58' W) and into each sector were settled down depth strata of 100 m. Two geographical areas (Northern and Southern of parallel 42° 41') were predetermined.

A total of 309 trawl operations were carried out at depths between 650-1200 m. The gear used for both vessels was the same (Figure 1). The duration of the hauls was initially two hours but after the first trip was changed to one hour due to the difficulties of trawling in the ground area.

The ichthyofauna caught in each haul was identified by species. The number of specimens, total weight and length frequency distribution were recorded for each species caught. In order to analyse the variability of abundance associated to the season, the number of hauls were aggregated by quarter ($Q_1=55$; $Q_2=109$; $Q_3=68$; $Q_4=65$).

Results and Discussion

The community of species in the area prospected presented high species richness. An amount of 106 species were made up of 70 teleosts, 11 sharks, 3 rays, 2 chimaeras, 11 crustacea, 6 molluscs and 3 equinoderms.

A total of 297 valid hauls were made during 309 hours of fishing and yielded a total catch of 45 145 kg. The most important species captured were teleosts: *H. mediterraneus*, *M.moro*, *L. eques*, *A. bairdii*, *E. telescopus*, *T. cristulata* and *L. piscatorius*, followed for deep sharks: *D. licha*, *D. calceus* and crustacean: *Ch affinis* (Figure 2). The yields obtained for the whole series of cruises were low (Table 1).

In general there were no differences in depth distribution of the species. All of them were present in every bathymetric zone sampled during whole series (Tables 1 and 2). However in the deepest stratum (>850 m) were obtained the highest yields being maximum value for *H. mediterraneus*.

Seasonal variation in biomass was found along the whole period, which did not follow the same trend for the species studied. In general in the spring cruises there was higher biomass in kg for *H. mediterraneus*, *A. bairdii*, *M. moro*, *L. eques* and *E. telescopus* (Figure 3). However *T. cristulata* present its highest value in summer surveys.

The length distribution of the most important species caught was different a long the study period indicating a possible variability associated to the season (Figure 4). Length distribution of *A. bairdii* showed in the spring surveys the highest frequency followed by *E. telescopus* (Figure 4). However in the summer and autumn surveys were observed high frequency of *L. eques* without any presence in spring and winter surveys. Length distribution of *M. moro* showed how the incorporation of the young fish occurs in autumn.

In summary, results indicate deep waters of Galician Bank present less biomass in relation with close areas such as Galician Continental slope (Piñeiro et al., 1997) but not in the richness of species. The relative abundance of species occurred is greater in the deeper stratum mainly for the dominant species: *H. mediterraneus*, *M.moro*, *L. eques*, *A. bairdii*, *E. telescopus* and *T. cristulata*.

In general there were no differences in depth distribution of the species characterised by the presence or absence of certain species. This might be due to the gear used and the range strata sampled. To gain an accurate knowledge of the species associated to this seamount is difficult because of the accessibility of the gear employed, along with environmental and biological factors.

References

Piñeiro, C.G^a., J.M. Casas, R. Bañon, A. Serrano, A. Calviño (1997). Resultados de la Acción Piloto de Pesca Experimental en el Talud de la Plataforma Gallega (Noroeste de la Península Ibérica). Datos Resúm. Ins. Esp. Oceanogr., Núm. 3, 57 pp.

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Table 1. Yields in kg/h by depth strata in Galician Bank

Species	<750 m	750-850 m	>850 m	Total
	120 hauls	130 hauls	74 hauls	297 hauls
Teleost	CPUE (Kg/h)	CPUE (Kg/h)	CPUE (Kg/h)	CPUE (Kg/h)
Hoplostethus mediterraneus	32.9	34.3	67.5	30.3
<i>Mora moro</i>	16.0	13.0	30.2	14.0
<i>Lepidion eques</i>	14.9	14.2	28.1	13.1
<i>Alepocephalus bairdii</i>	7.7	15.6	34.1	11.7
<i>Epigonus telescopus</i>	4.1	5.5	12.6	4.8
<i>Trachyscorpia cristulata echinata</i>	4.6	4.8	9.3	4.2
<i>Lophius piscatorius</i>	3.5	2.3	4.4	2.5
<i>Beryx splendens</i>	1.6	0.4	0.6	0.8
<i>Malacocephalus laevis</i>	0.6	0.3	0.6	0.4
<i>Phycis blennoides</i>	0.4	0.4	0.7	0.3
<i>Neoscopelus microchir</i>	0.2	0.2	0.4	0.2
<i>Conger conger</i>	0.2	0.1	0.3	0.2
<i>Centrolophus niger</i>	0.2	0.2	0.4	0.2
Elasmobranch				
<i>Dalatias licha</i>	1.3	2.9	5.8	2.0
<i>Deania calceus</i>	2.1	1.2	3.2	1.7
<i>Scymnodon ringens</i>	0.4	1.2	4.1	1.2
<i>Centrophorus squamosus</i>	0.7	0.8	2.9	1.0
<i>Etmopterus spinax</i>	0.6	0.6	1.3	0.5
<i>Raja batis</i>	0.3	0.1	0.5	0.2
Crustacean				
<i>Chaecon affinis</i>	0.9	1.5	3.4	1.2
<i>Aristeus antennatus</i>	1.0	0.8	1.5	0.8
<i>Bathynectes maravigna</i>	0.2	0.3	0.5	0.2

Table 2.- Catch (number of individuals) and yields (N/h) by depth strata obtained in Galician Bank

Species	<750 m		750-850 m		>850		Total	
	120 hauls		103 hauls		74 hauls		297 hauls	
	Total N	N/h	Total N	N/h	Total N	N/h	Total N	N/h
<i>Hoplostethus mediterraneus</i>	24191	195	22385	209	31274	401	55465	179.5
<i>Lepidion eques</i>	19467	157	14138	132	20907	268	40374	130.7
<i>Mora moro</i>	1928	16	1174	11	2060	26	3988	12.9
<i>Epigonus telescopus</i>	863	7	750	7	1101	14	1964	6.4
<i>Alepocephalus bairdii</i>	338	3	700	7	1171	15	1509	4.9
<i>Trachyscorpia cristulata echinata</i>	441	4	417	4	593	8	1034	3.3
<i>Malacocephalus laevis</i>	567	5	269	3	352	5	919	3.0
<i>Beryx splendens</i>	532	4	64	1	75	1	607	2.0
<i>Phycis blennoides</i>	366	3	77	1	118	2	484	1.6
<i>Neoscopelus microchir</i>	118	1	124	1	144	2	262	0.8
<i>Lophius piscatorius</i>	64	1	34	0	49	1	113	0.4
<i>Conger conger</i>	18	0	7	0	16	0	34	0.1
<i>Centrolophus niger</i>	6	0	4	0	6	0	12	0.0
<i>Etmopterus spinax</i>	474	4	368	3	535	7	1009	3.3
<i>Deania calceus</i>	514	4	287	3	470	6	984	3.2
<i>Scymnodon ringens</i>	20	0	109	1	214	3	234	0.8
<i>Dalatias licha</i>	26	0	35	0	53	1	79	0.3
<i>Centrophorus squamosus</i>	9	0	12	0	30	0	39	0.1
<i>Raja batis</i>	5	0	1	0	3	0	8	0.0
<i>Aristeus antennatus</i>	2736	22	1746	16	2636	34	5372	17.4
<i>Bathynectes maravigna</i>	617	5	727	7	984	13	1601	5.2
<i>Chaecon affinis</i>	166	1	237	2	387	5	553	1.8

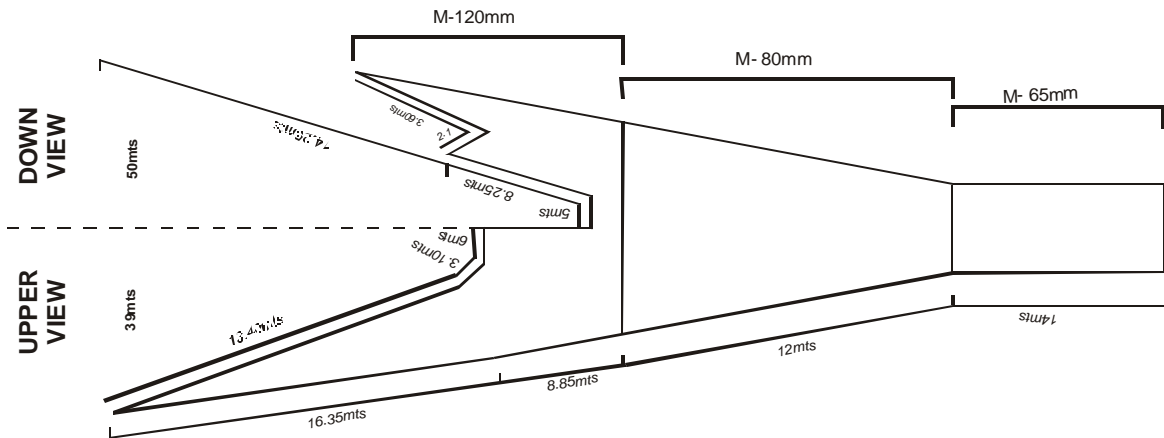


Figure 1. Bottom trawl used during the survey in Galician Bank

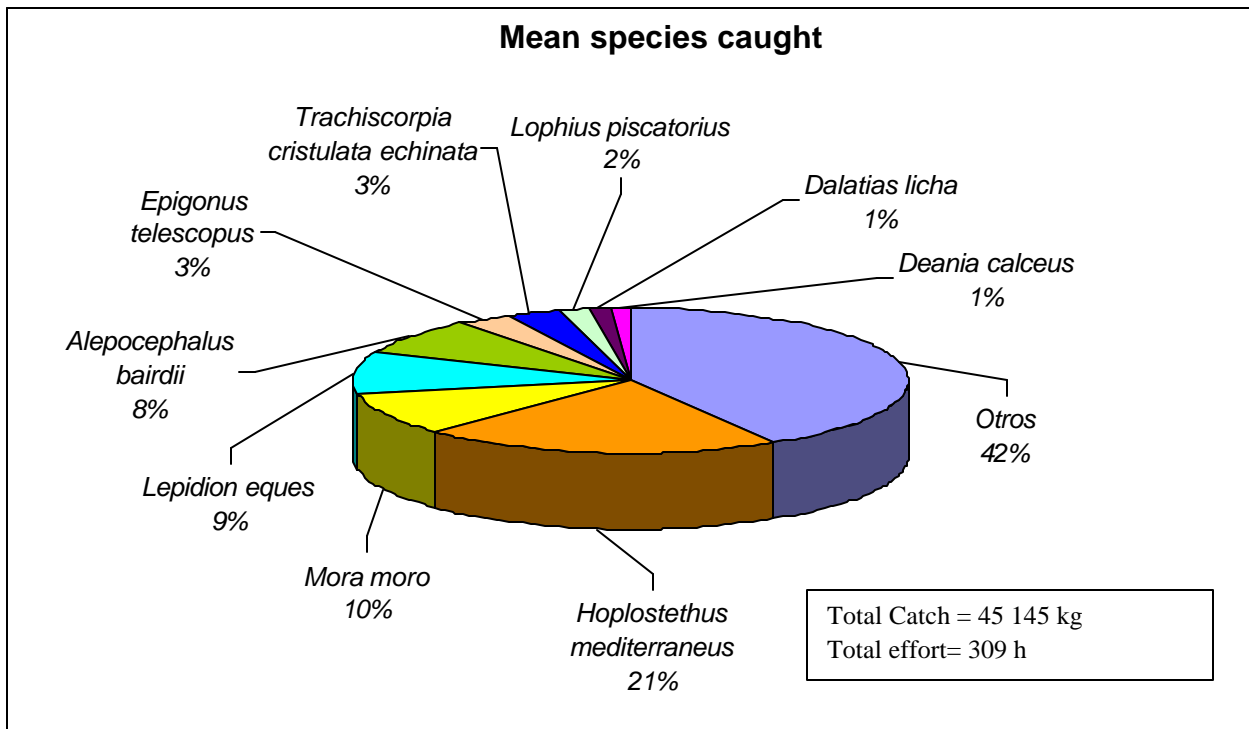


Figure 2.- Catch of the most important species in Galician Bank

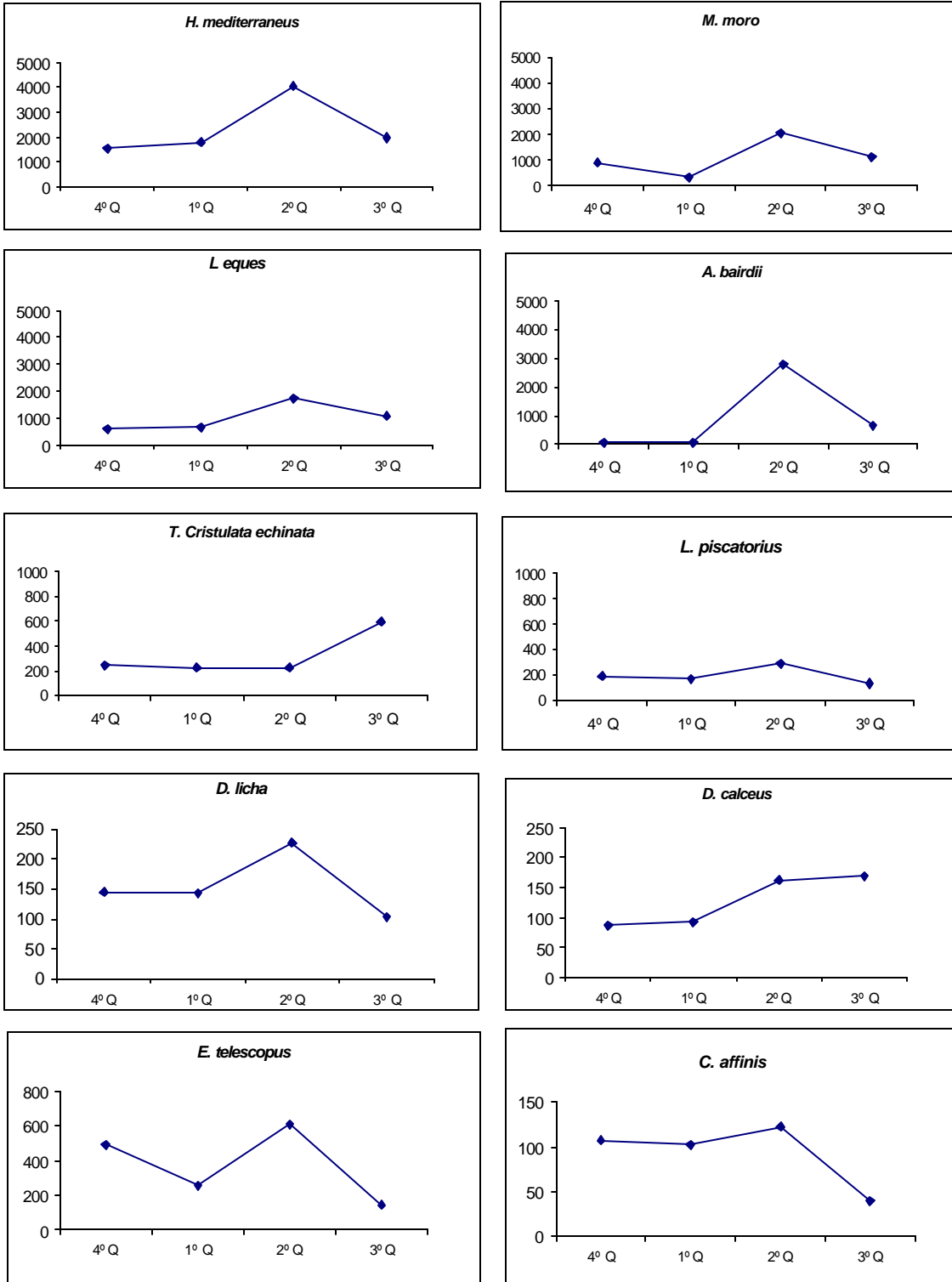


Figure 3.- Total catch in kg by quarter of the most important species caught.

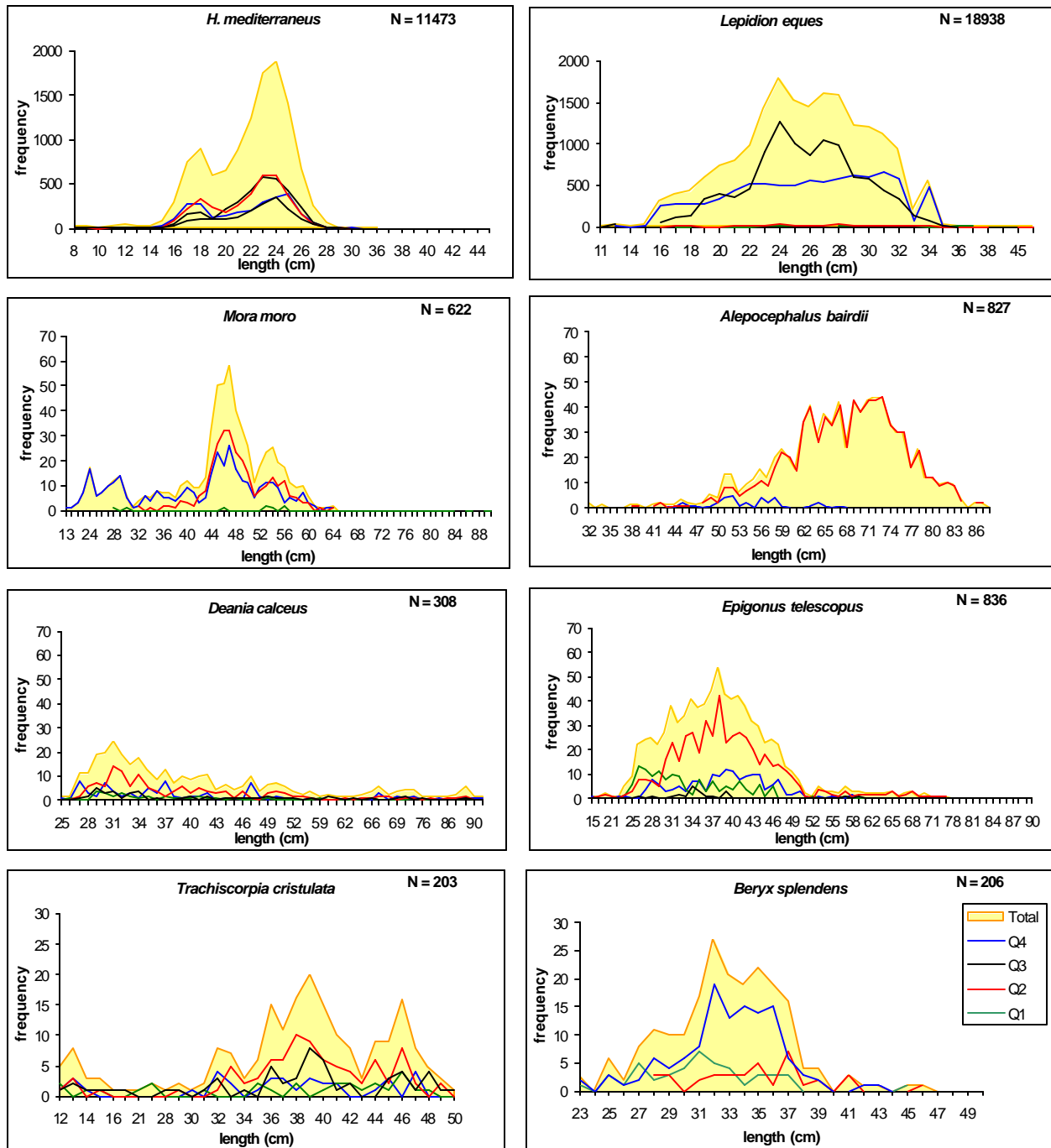


Figure 4.- Annual and quarterly length frequency distribution for the most important fish species caught in Galician Bank.