

COMMERCIAL CATCH COMPOSITION IN NEPHROPS FISHING GROUNDS

Ch. Mytilineou*, C.-Y. Politou and A. Fourtouni

National Center for Marine Research, Ag. Kosmas 16604, Athens, Greece

Abstract

The composition of the commercial species in *Nephrops* fisheries is examined from experimental surveys in different fishing grounds of the North Evoikos Gulf (Greece). In the study area, the catches by weight of *N. norvegicus* represented 6% of the total catch and 10% of the commercial catches, whereas in the main *Nephrops* fishing ground they represented 16% and 24% respectively. This species ranged first among the commercial species by numbers and fourth by weight. The commercial by-catch included 49 species, representing 54% of the total catch by weight. The main species by weight were *M. merluccius*, *M. poutassou*, *I. coindetii*, *T. m. capelanus* and *L. budegassa*.

Key-words: fisheries, trawl surveys, decapoda, fishes, Aegean Sea

Introduction

Nephrops norvegicus (L.) (Norway lobster) is one of the most commercially important species among the sea products of the Greek waters, with a very high market price. In 1994, the total landings in the country reached 1087 metric tons (National Statistical Service of Greece, 1995). No specialized fishery for *Nephrops* exists in the Greek waters, however the fishermen know well the species grounds and so they may direct in a way their catches. Trawling is mainly used for *Nephrops* fishing, but in regions where this gear is prohibited, trammel nets are also used. This last method is exercised only in some restricted localities, and so it corresponds to a very low percentage of the total *Nephrops* catch. *Nephrops* trawl fishery is a multispecies fishery, and hence other commercial or not species of various sizes are also by-caught (1, 2, 3).

In the present study, the commercial species from *Nephrops* fisheries are examined from experimental surveys in the North Evoikos Gulf, a geographical area that consists a *Nephrops* fishing ground for the Greek waters (1994: 138 metric tons, National Statistical Service of Greece, 1995). The composition of these commercial species by numbers and weight are analysed by different locations of different depth and fishing conditions. The ratio by weight of all the commercial species to the total catch (C/T) was also calculated for each location.

Material and methods

Samples were collected during 17 experimental surveys, carried out between October 1993 and September 1995 in the North Evoikos Gulf (western part of the Aegean Sea). A commercial trawler was used equipped with a trawl of 16 mm cod-end mesh size (from knot to knot). Four different stations, characterised by different depth or fishing conditions, were selected for the sampling (A: 220-330 m depth, open to trawling; B: 100-137 m depth, open to trawling; C: 115-192 m depth, closed to trawling; D: 60-85 m depth, closed to trawling). The duration of each experimental haul lasted from half to two hours according to the depth and the bottom morphology, although during professional fishing each haul lasts 6 hours usually. For comparison purposes, all the catches were standardized to 1 fishing hour. The total number and the total weight of each commercial species as well as the weight of the total catch for each station were recorded on board.

The analysis was based on the mean number and the mean weight of each species per station for the overall of the 17 surveys. The coefficient of variation (CV) was also estimated. The Friedman's test and the Wilcoxon paired-sample test were applied for comparisons between stations.

Results

According to our results (Tables 1 and 2), in station D, where the highest number of commercial species was caught (46), *Trisopterus mimutus capelanus* was the most abundant species (Table 1). It was followed by *N. norvegicus*, *Merluccius merluccius* and *Pagellus acarne*. *Illex coindetii* and *Mullus barbatus* were fished in lower numbers. However, regarding the mean weight (Table 2), *M. merluccius* presented the highest value, followed by *T. m. capelanus*, whereas *Lophius budegassa*, *P. acarne*, *N. norvegicus* and *I. coindetii* followed with lower weight values. *Scorpaena scrofa* represented a considerable weight value (>10 Kg/h), although it was found in very low numbers. In station C, characterized by 23 commercial species accompanying *N. norvegicus*, *Micromesistius poutassou* was the main contributor to the catch with more than 1000 individuals per fishing hour (Table 1). *N. norvegicus*, *I. coindetii*, *Lepidorhombus boscii* and *T. m. capelanus* followed with quite lower values. *Eutrigla gurnardus*, *M. merluccius* and *Liocarcinus depurator* were caught in low numbers (<100 N/h). From the estimation of the mean weight (Table 2), *M. poutassou* showed again the highest value. It was followed by *I. coindetii* and *M. merluccius*. *N. norvegicus*, *L. boscii* and *L. budegassa* showed lower values. In station B, characterized by 26 commercial species apart from *N. norvegicus*, the latter showed the highest mean number

Table 1. Mean number of specimens per fishing hour (N/h) and Coefficient of variation (CV) for the commercial species caught per station (17 surveys) and total mean value (AVG) for all stations together in the N. Evoikos Gulf.

SPECIES	LOCATION		A		B		C		D		AVG	
	N/h	CV	N/h	CV	N/h	CV	N/h	CV	N/h	CV	N/h	CV
FISH												
<i>Citharus linguatula</i>				0.14	0.00				17.84	1.36	4.49	544.35
<i>Conger conger</i>	0.41	1.57	0.03	0.00				0.96	0.85	0.35	265.09	
<i>Dasyatis pastinaca</i>								1.65	2.50	0.41	1001.33	
<i>Diplodus annularis</i>								8.06	1.28	2.02	513.02	
<i>Engraulis encrasicolus</i>			0.07	0.00				0.71	0.00	0.19	2781.82	
<i>Eutrigla gurnardus</i>	1.25	0.00	10.49	1.21	88.92	1.20		7.17	1.63	26.96	306.95	
<i>Galeorhinus galeus</i>								0.12	0.00	0.03	0.00	
<i>Galeus melastomus</i> *	267.7	1.13	0.03	0.00	48.89	2.83		2.35	0.00	79.75	340.83	
<i>Lepidorhombus boscii</i>	43.20	0.98	7.65	1.48	113.7	0.58		6.94	5.91	42.88	147.63	
<i>Lophius budegassa</i>	2.86		2.19		8.53			14.24				
<i>Lophius piscatorius</i>	0.06	0.00	0.03	0.00	0.06	0.00		0.24	0.00	0.10	692.11	
<i>Merlangius merlangus</i>								0.71	1.42	0.18	566.67	
<i>Merluccius merluccius</i>	4.95		10.29		90.87			228.1				
<i>Micromesistius poutassou</i>	34.90		101.5		1144.			14.41				
<i>Mullus barbatus</i>			5.08	3.32	10.85	1.36		65.14	1.52	20.27	368.46	
<i>Mullus surmuletus</i>								11.88	0.00	2.97	0.00	
<i>Myliobatis aquila</i>								11.88	0.00	2.97	0.00	
<i>Pagellus acarne</i>								204.4	1.00	51.12	401.16	
<i>Pagellus erythrinus</i>								0.24	0.00	0.06	0.00	
<i>Phycis blennoides</i>	8.36	1.07	2.83	3.26						2.80	322.11	
<i>Raja clavata</i> *					0.58	7.02				0.14	2808.70	
<i>Raja montagui</i> *					0.65	4.78				0.16	1910.93	
<i>Raja naevus</i> *			0.07	0.00						0.02	0.00	
<i>Raja radula</i> *					0.05	0.00				0.01	0.00	
<i>Scomber scombrus</i>								18.51	0.99	4.63	394.11	
<i>Scorpaena notata</i>			0.03	0.00				0.81	0.00	0.21	3160.80	
<i>Scorpaena porcus</i>								0.35	0.00	0.09	0.00	
<i>Scorpaena scrofa</i>	0.03	0.00						10.70	0.52	2.68	232.99	
<i>Serranus cabrilla</i>								0.16	0.00	0.04	0.00	
<i>Solea vulgaris</i>			0.06	0.00	0.14	1.57		25.05	0.87	6.31	348.57	
<i>Spicara flexuosa</i>			0.24	0.00				6.16	0.63	1.60	369.60	
<i>Spicara smaris</i>			1.11	3.13	0.35	2.83		0.37		0.37	822.25	
<i>Trachurus mediterraneus</i>			0.06	0.00				2.36	1.69	0.60	839.73	
<i>Trachurus trachurus</i>	0.06	0.00	6.79	2.95	6.82	3.15		4.87	2.19	4.63	398.78	
<i>Trigla lucerna</i>								0.08	0.00	0.02	0.00	
<i>Trigla lyra</i>								0.34	3.40	0.08	1360.00	
<i>Trigloporus lastoviza</i>								0.94	0.00	0.24	0.00	
<i>Trisopterus mimutus</i>	0.25	4.52	64.28	1.17	105.4	1.07		684.8	0.80	213.7	199.18	
<i>Uranoscopus scaber</i>								0.41	0.66	0.10	263.94	
<i>Zeus faber</i>			0.15	1.70	1.52	1.96		7.32	0.99	2.25	287.15	
DECAPODS												
<i>Homarus gammarus</i>								0.08	0.00	0.02	0.00	
<i>Nephrops norvegicus</i>	140.0	0.49	610.3	0.50	408.7	0.28		369.7	0.53	382.2	55.77	
<i>Scyllarus pygmaeus</i>								1.06	2.83	0.26	1133.33	
<i>Squilla mantis</i> *								3.01	3.13	0.75	250.25	
<i>Liocarcinus depurator</i> *	28.77	1.06	82.91	0.60	57.81	1.45		8.64	1.46	44.53	134.18	
CEPHALOPODS												
<i>Eledone cirrosa</i>					0.05	0.00		9.36	3.80	2.35	2003.01	
<i>Illex coindetii</i>	57.79	1.30	66.17	0.99	333.2	0.73		80.03	0.62	134.3	132.12	
<i>Loligo vulgaris</i>								18.27	2.40	4.57	960.28	
<i>Octopus vulgaris</i>			0.17	2.05	0.05	0.00		0.65	1.28	0.22	515.16	
<i>Sepia officinalis</i>					0.40	0.00		2.55	3.25	0.74	1028.16	
TOTAL	590.6		972.7		2422.			1853.		1045.		

* indicates the species of low commercial value, sometimes discarded

(Table 1). *M. poutassou* was found in quite lower abundance, followed by *L. depurator*, *I. coindetii* and *T. m. capelanus*. Regarding the mean weight values, these did not surpass generally 10 Kg/h (Table 2). *N. norvegicus* presented again the highest value by weight. It was followed by *I. coindetii*, *M. poutassou* and *M. merluccius*. In station A, where the lowest number of commercial species was caught (18), the most important species by number and weight was *Galeus melastomus* (Table 1 and 2). *N. norvegicus* followed in terms of numbers (Table 1), and *L. budegassa* and *I. coindetii* in terms of weight.

Regarding all the studied stations, the most abundant commercial species accompanying *Nephrops* were *M. poutassou*, *T. m. capelanus*, *I. coindetii*, *M. merluccius* and *G. melastomus* (Table 1). However, the most important in terms of weight were *M. merluccius* and *M. poutassou* (Table 2).