

THE STATUS OF THE DEMERSAL FISHERIES RESOURCES IN THE MARMARA SEA

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Abstract

A bottom trawl survey was carried out in the Marmara Sea in summer 2001 in order to determine species composition and biomass of demersal fisheries resources. The average catch was 175.9 ± 34.5 kg/hour ($\pm se$) and the average biomass $10,799.7 \pm 1,882.9$ kg/nm² ($\pm se$).

Keywords: Bottom-trawl survey, catch composition, biomass, Marmara Sea

Introduction

The Marmara Sea, located between two different marine systems, the Mediterranean Sea and the Black Sea, is important as feeding and breeding habitat for commercial pelagic species (1). Few studies concerning the demersal stocks of the Marmara Sea are available (2, 3, 4). The present study evaluates the condition of the demersal fish stocks of the Marmara Sea and proposes advices for the sustainable fisheries management in the area.

Materials and Methods

This research was carried out in August 2001, in the Marmara Sea using a bottom trawl net. The head-rope length of the trawl net was 21.6 m and the cod-end mesh size 20 mm (knot to knot). The duration of each haul was 30 min at depths up to 200 m and 60 min at depths >200 m. The trawling speed was 2.2-2.6 nm/hour. Biomass was calculated based on the swept area method.

Results

A total of 12 hauls were carried out between 30-300 m. The average catch was 175.9 ± 34.5 kg/hour ($\pm se$). The average biomass was $10,799.7 \pm 1,882.9$ kg/nm² or $5,821.1 \pm 1,014.6$ kg/Km².

From a total of 91 species identified, 34 were osteichthyes, 16 molluscs (4 bivalves, 3 gastropods, 9 cephalopods), 13 echinoderms, 12 crustaceans, 9 chondrichthyes, 6 cnidarians and 1 annelid. The commercial species comprised 78% of the total catch. Osteichthyes made up the greatest portion of the catch (by weight: 56.83%; by number: 34.92%) (Fig. 1).

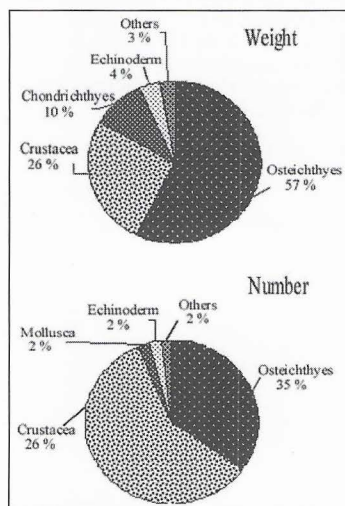


Fig. 1. Catch species composition by number (N) and weight (W).

conserving demersal fishing resources, trawling has been prohibited since the early 1970s. In spite of this, due to the lack of any official control trawl fishing still continues illegally.

Despite a serious decrease in hake and whiting stocks in 1990-1994 (4), an increase in both stocks was found in this study. The total amount of whiting catch was 2047 t in 1990, 557 t in 1994 and 2455 t in 2000. The demersal resources of the Marmara Sea might have positively affected by some protecting measures taken, such as: (a) the prohibition of the hydraulic dredges used for *Chamelea gallina* fishing since 2000, (b) the prohibition of sand extractions and (c) the establishment of the sewage treatment systems.

The protection of biological diversity in the Marmara Sea and the sustainable fisheries development could be achieved by: (a) respecting

Table 1. The frequency of occurrence and biomass (in kg/nm²) indices (mean standard error, se) of species caught in the Marmara Sea. Species are listed alphabetically.

SPECIES	Biomass index		Frequency of occurrence (%)
	kg/nm ²	Se	
FISH			
<i>Blennius ocellaris</i>	5,2	1,87	50,00
<i>Callionymus lyra</i>	70	26,33	66,66
<i>Callionymus risso</i>	37,5	21,69	41,66
<i>Cepola macrophthalma</i>	18,6	9,26	50,00
<i>Chelidonichthys gurnardus</i>	57,2	23,69	58,33
<i>Chelidonichthys lucernus</i>	209	74,38	58,33
<i>Citharus linguatula</i>	63,3	25,58	50,00
<i>Galeus melastomus</i>	41,4	28,24	25,00
<i>Gobius auratus</i>	17,5	10,08	75,00
<i>Gobius niger</i>	102,4	35,93	66,66
<i>Lepidotrigla cavillone</i>	28,6	17,74	50,00
<i>Lophius budegassa</i>	43,1	38,96	25,00
<i>Merlangius merlangus</i>	2969,5	1267,01	75,00
<i>Merluccius merluccius</i>	976,6	217,32	100,00
<i>Mullus barbatus</i>	8,9	6,69	25,00
<i>Mullus surmuletus</i>	0,4	0,4	8,33
<i>Mustelus mustelus</i>	76,9	49,07	25,00
<i>Raja clavata</i>	867,8	500,79	58,33
<i>Rostroraja alba</i>	64,7	30,21	50,00
<i>Scophthalmus maeoticus</i>	4,8	3,38	16,66
<i>Scophthalmus rhombus</i>	10	7,22	16,66
<i>Scyliorhinus canicula</i>	71	44,94	41,66
<i>Serranus hepatus</i>	198,7	73,22	91,66
<i>Solea solea</i>	35,4	11,15	58,33
<i>Sprattus sprattus</i>	657,3	403,06	66,66
<i>Trachurus trachurus</i>	378,9	176,26	91,66
<i>Trigla lyra</i>	53	41,57	25,00
Other fishes	63,8	28,5	
CRUSTACEANS			
<i>Parapenaeus longirostris</i>	2063,4	578,91	83,00
<i>Macropipus depurator</i>	571,07	320,76	91,66
<i>Plesionika heterocarpus</i>	358,74	208,20	33,33
Other crustaceans	2,22	0,86	
CEPHALOPODS			
<i>Loligo vulgaris</i>	8,79	3,73	58,33
<i>Sepia officinalis</i>	22,02	11,51	16,66
<i>Sepia orbignyana</i>	29,22	15,81	50,00
Other cephalopods	6,06	2,91	
OTHER INVERTEBRATES			
	510,54	261,19	

the fishing prohibitions, especially for the protected species, (b) limiting fishing effort, (c) protecting shores and (d) using more selective nets.

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