

**DISCARD COMPOSITION OF THE EUROPEAN HAKE MERLUCCIUS MERLUCCIUS (LINNAEUS, 1758)
BOTTOM TRAWL FISHERY IN TWO AREAS OF THE NW MEDITERRANEAN SEA,
NORTHERN TYRRHENIAN SEA AND CATALAN SEA**

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Abstract

This study provides data on the discard composition of the European hake bottom trawl fishery in two different areas of the NW Mediterranean, paying special attention to the non-charismatic species. On board sampling was conducted monthly from February to July 2001. The total number of species caught was 189 (163 discarded, 68 commercial) in the northern Tyrrhenian Sea and 246 (207 discarded, 78 commercial) in the Catalan Sea.

Keywords: discards, Merluccius merluccius, bottom trawling, Mediterranean Sea

Introduction

Historically, fisheries management has been based on the results of single-species stock assessment, without considering the ecology of the species under management (e.g., habitat requirements, predation, competition, discards, by-catch). Only in recent years the environmental impacts of fishing have received increasing attention. The reduction of discards and incidental by-catch is a priority in the Common Fishery Policy of the European Union (1). Available studies on discards in NW Mediterranean generally address the most important commercial species (2, 3). The present study provides data on the discard composition associated with the European hake trawl fishery in two areas of the NW Mediterranean sea, with a special attention to the less charismatic species.

Material and methods

The study was conducted in the northern Tyrrhenian and Catalan seas (4). Sampling was carried out from February 2001 to July 2001. A total of 60 commercial hauls was carried out on hake fishery grounds (80-350 m depth). Scientific observers performed fishing trips on board commercial trawlers every month, for three consecutive days. The fishing zones were decided daily by fishers. Total catch was analysed, the taxonomic composition was determined to species level and the commercial and discarded fractions were recorded and weighted.

Results and discussion

During the study period, 189 species were caught in the northern Tyrrhenian Sea and 246 along the Catalan coast, indicating the multispecies nature of the bottom trawling fishing activity (Table 1). The commercial fraction was composed of 68 and 78 species in each area, while discards consisted of 163 and 207 species, respectively. Note that the same species could be discarded or commercialised. Discarding depends mostly on the absence of commercial value of the species and/or the occurrence of damaged or undersized (not commercial) specimens. For some species, a minimum landing size is in force.

Table 1. List of taxonomic groups caught in hake trawl fishery from the two studied areas. Same species could be discarded or commercialised.

Taxon	Areas					
	Northern Tyrrhenian Sea			Catalan Sea		
	N of species	N discarded species	N commercial species	N of species	N discarded species	N commercial species
Amphipoda	10	10		10	9	1
Brachiopoda	1	1				
Cnidaria	3	3		4	4	
Echinodermata	12	12		17	16	1
Gastropoda	12	12		19	18	1
Porifera	3	3		4	4	
Thaliacea	3	3		4	4	
Chordata	26	26		24	17	11
Osteichthyes	85	64	43	105	85	48
Cephalopoda	30	13	17	33	15	17
Chondrichthyes	1	1		4	2	1

In both areas, the commercial part was composed of species belonging mainly to four taxonomic groups (Table 2). Off the Catalan coast, *Stichopus regalis* enjoyed high prices at the auction, despite its low landings. The presence of *Bolinus brandaris*, a target species of a particular artisanal fishery, and *Pecten jacobeanus* can be considered accidental in the trawl catches. A marked dominance of Osteichthyes both in terms of number of species (63% in the northern Tyrrhenian, 62% in the Catalan Sea) and biomass (72.3 and 89% respectively) was observed. It was the highest catch of blue whiting in the Catalan coast that determined the differences in the hourly yields within this group in the two study areas.

Tab. 2. Mean abundance (kh/h) and standard error (SE) of the taxonomic groups associated to hake fishery for the two studied areas.

area	Northern Tyrrhenian sea				Catalan sea			
	discarded	SE-	commercial	SE-	discarded	SE-	commercial	SE-
Amphipoda	0.114	0.019			0.101	0.010	0.100	0.001
Bolus brandaris	0.007	0.176						
Bolus brandaris	0.127	0.018			0.167	0.025		
Echinodermata	0.209	0.044			0.342	0.079	0.097	0.018
Gastropoda	0.017	0.039			0.025	0.008	0.007	0.007
Porifera	0.020	0.010			0.028	0.010		
Thaliacea	0.005	0.057			0.167	0.057		
Chordata	0.677	0.048	0.737	1.441	0.829	0.117	1.077	0.407
Osteichthyes	4.725	0.127	18.228	0.829	14.201	7.846	72.006	11.664
Cephalopoda	0.017	0.040	7.710	0.718	0.046	0.104	1.576	0.404
Chondrichthyes	0.206	0.112	0.235	0.934	0.062	0.091	0.041	0.104

With respect to discards, Osteichthyes dominated in terms of number of species and by weight (39.0 and 70.4% of the total discards, respectively, in the northern Tyrrhenian Sea; 41 and 84%, in the Catalan Sea). The most abundant species always discarded in the northern Tyrrhenian sea were the invertebrates *Macropipus tuberculatus*, *Plesionika heterocarpus*, *Octopus salinii*, *Astropecten irregularis pentacanthus*, *Cassidaria echinofora*, *Alcyonium palmatum* and the fishes *Gadiculus argenteus argenteus*, *Capros aperand* *Scyliorhinus canicula*. Most of the species discarded were similar to those from the Catalan Sea, where, apart from the large number of benthic invertebrates discarded, the highest discards were those of blue whiting.

References

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