

INVESTIGATION ON THE FEEDING HABITS OF EUROPEAN HAKE *MERLUCCIUS MERLUCCIUS* (LINNAEUS, 1758) IN THE NORTH MARMARA SEA

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Abstract

This study was performed between April 2008 and August 2009 to determine the feeding habits of European hake (*Merluccius merluccius*). The specimens were collected from the range of 20-90 meters depth by trawl net from the North Marmara Sea. During the research period, a total of 343 specimens were examined and the main diet of European Hake, based on prey index of relative importance, comprised Teleostei (91,2%), Crustacea (5,1%) and Echinoidea (3,6%).

Keywords: *Fishes, Diet, Marmara Sea, Fish Behaviour*

Introduction

European hake (*Merluccius merluccius*) is an important predator of Marmara communities. Hake's ecological and economic importance are related to many aspects of its biology [1]. Dietary studies are crucial for their contribution to a better understanding of the trophic levels and food webs [2]. The purpose of this study was to examine to feeding habits of European hake caught in north of the Marmara Sea with based on the seasonal analysis of its stomach contents.

Materials and Methods

Specimens were collected from April 2008 to August 2009 from the range of 20-90m depth in all seasons from the Sea of Marmara by using a bottom trawl (Fig. 1). A total of 343 hakes were dissected on board immediately after capture. Stomachs preserved in 4% formalin for further analysis. Prey items were identified and sorted into taxonomic groups at the level of species in the laboratory. Remains of the preys that contained otoliths of various fishes were identified by the help of published guides. Each prey was weighted to the nearest 0,01g. After analysis, percentage frequency of occurrence (F%), percentage by numbers (N%), percentage by weight (W%), the index of relative importance (IRI) and percent of IRI (IRI%) were calculated [3, 4].

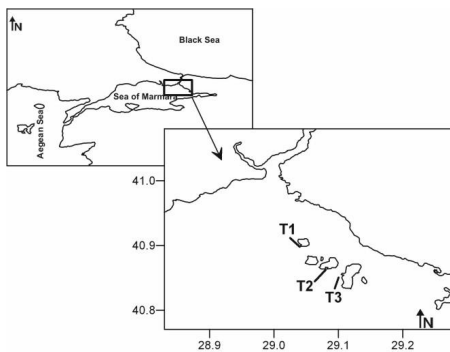


Fig. 1. Location of sampling areas in the Marmara Sea

Results and Discussion

During the research period, a total 343 *M. merluccius* were examined. 134 stomachs of specimens were determined to be empty and 209 stomachs of them were determined to be full. As families or species 20 different prey groups were identified from the stomach contents, Teleostei represented 91,2% the index of relative importance (IRI%), Crustacea 5,2% and Echinoidea 3,6%. During all seasons except summer, the main food group (diet) of hake, based on weight was Teleostei, (Table 1). Crustacea, especially shrimps, were the most represented prey group in summer with 55,8% of IRI. The most important Teleostei species was *Trachurus mediterraneus* in the diet. Echinoidea seemed to be an important prey group in the diet of juveniles, this situation can be related to the way of foraging of juveniles.

Tab. 1. Feeding composition of European hake in north of the Marmara Sea for all seasons.

Prey	Spring (n=63)				Summer (n=68)			
	F%	N%	W%	IRI%	F%	N%	W%	IRI%
Polychaeta	4,44	3,39	0,01	0,28	-	-	-	-
Crustacea	11,11	11,86	0,11	1,05	40,82	40,74	53,35	55,58
Cnidaria	-	-	-	-	-	-	-	-
Echinodermata	-	-	-	-	14,29	12,96	0,4	2,76
Spinculida	2,22	3,39	<0,01	0,14	-	-	-	-
Mollusca	2,22	1,69	0,05	0,07	-	-	-	-
Tunicata	-	-	-	-	-	-	-	-
Teleostei	97,78	79,66	99,84	98,47	44,9	46,3	46,25	41,66

Prey	Autumn (n=138)				Winter (n=74)			
	F%	N%	W%	IRI%	F%	N%	W%	IRI%
Polychaeta	-	-	-	-	-	-	-	-
Crustacea	20,29	20	8,23	3,41	12,24	9,84	0,43	1,01
Cnidaria	1,45	1,18	0,99	0,06	-	-	-	-
Echinodermata	17,39	14,12	0,03	4,36	22,45	18,03	0,04	6,59
Spinculida	-	-	-	-	-	-	-	-
Mollusca	-	-	-	-	-	-	-	-
Tunicata	2,9	2,35	0,41	0,07	-	-	-	-
Teleostei	75,36	61,18	90,33	92,08	89,8	72,13	99,53	92,4

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