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Distribution of Parasite Fauna of Chub Mackerel in Aegean and Mediterranean Sea

Kolyoz Balığı Parazit Faunasının Ege ve Akdenizdeki Dağılımı

Ahmet Akmirza

Istanbul University, Faculty of Aquatic Products, Laleli 34470
Istanbul,Turkey

Abstract

This investigation was carried out near Gökçeada (Aegean Sea) and Antalya (Mediterranean) between May 2000–September 2000 , to search for the parasite fauna of Chub Mackerel (Scomber japonicus (Houttyn, 1780)). A total 232 Chub Mackerel were caught. 9 parasite species, 4 belonging to ectoparasites, 5 to endoparasites, were found near Gökçeada. 5 parasite species, 2 belonging to ectoparasites , 3 to endoparasites, were found near Antalya. The parasites found were Myxobolus sp. (Myxosporae), Octosoma scombri (Monogea), Ectenurus lepidus, Opechona ollsoni, Lepidopedon elongatum (Digenea), Anisakis simplex , Contracaecum aduncum (Nematoda), Lernaea sp. , Hatschekia sp. (Copepoda) near Gökçeada , Myxobolus sp., Octosoma scombri, Ectenurus lepidus, Lepidopedon elongatum, Anisakis simplex near Antalya.

Keywords: Chub Mackerel, Parasite, Aegean Sea, Mediterranean

Introduction

Although generally some fish parasites are encountered during all seasons of the year, some are seen at certain seasons and months, or large differences occur at their abundance and prevalence. These differences of parasites may be due to geographical regions as well as seasons. This is mainly because of physical and chemical alteration of water , geographical isolation , inhabitance and nourishment, presence and density of intermediate hosts (Chubb,1979 ; Kuru and Yıldırım, 1998 ; Müller and Anders,1986 ; Woo, 1995). Monogenetic trematodes do not need an intermediate host to complete their life cycle, whereas digenetic trematodes, cestodes and nematodes need intermediate host. The differences in ecological characteristics of the seas surrounding Turkey, allow biological abundance. Some species can live in Turkish seas that have various ecological characteristics. The Chub Mackerel has a wide range of distribution. It is found in the warmer parts of the Atlantic and Pacific Oceans, Mediterranean , Marmara Sea and Black Sea. Chub Mackerel that is a pelagical fish migrates at certain times.

The Chub Mackerel has a high economic value and plays an important role in Turkish fish production. According to 1997 data, 36.18 % of totally catched fish in Aegean Sea and 15.95 % in Mediterranean are Chub Mackerel. (Su Ürünleri İstatistikleri 1997).

Our goal was to determine the parasite fauna and their differences in infection rates of the Chub Mackerel catched in the Aegean Sea and Mediterranean.

Materials and Method

Our research material, Chub Mackerel , was obtained by using pule and line, gill-net and purse-seine around Antalya and Gökçeada. The obtained samples were transferred alive or fresh to the laboratory to research. The parasites were examined alive and some put into solutions for further studies, and preparats of some samples were made. The general parasitologic metods were used in examinations (Bylund *et.al.*, 1986 ; Kruse and Pritchard, 1982) . The identification of the species were based on anatomic and morphologic characteristics. The identification of species were used by Akşiray (1954). Müller and Anders (1986), Yamaguti (1958,1962, 1963).

Results

232 Chub Mackerel that are caught from Aegean Sea (around Gökçeada) and Mediterranean (around Gulf of Antalya) have been examined

parasitologically. Among these fish , 110 were caught around Gökçeada , of which 44 in May, 66 in September . The remaining 122 were obtained around Antalya,48 in June and 74 in August.

After the examination, 9 species of parasites were found in the fish around Gökçeada, 4 of which were ectoparasites and the remaining 5 endoparasites. The examination revealed that 5 species were found around Antalya, 2 being ectoparasites and 3 endoparasites.. Information is given about parasite species, their infection rates and the value of polyparasitism in the tables.

When the tables are studied, the prevelence of parasites around Gökçeada was seen to be quite high, around 80-95 % , whereas, the prevalence around Antalya was 20-35 %. *Opechona ollsoni* was a digenetic trematode that was seen to be the most abundant parasite with an prevalence varying between 60-70 % around Gökçeada. However, no *Opechona ollsoni* was seen in the Gulf of Antalya. Again, no *Lernaea sp.*, which was a type of Copepod parasite, was seen around Antalya , whereas, it was seen around Gökçeada at a rate of 10-20 % . It can be said that the Chub Mackerel fish around Gökçeada had 5 species, and those around Antalya had 2 species of parasites.

Discussion

In this investigation , 9 parasite species were found around Gökçeada and 5 species around Antalya. It was found that there were 11 species around Gökçeada by a previous research (Akmırza,1997) . Isopod parasites which were found with low prevalence value (1-3 %) were found around neither Gökçeada nor Antalya.

In this study, *Octosoma scombrii* which is the specific parasite of Chub Mackerel was found with low infection rate around Gökçeada and Antalya, but only in May it is observed that the rate of infection increased to 31 % around Gökçeada.

The prevalence of digenetic trematodes which were carried out by research around Gökçeada agrees with the infection rate found by this resaerch. Intermediate host takes the important role in speading of digenetic trematodes. The metacercaria of *Opechona*, such as *Ectenurus* and *Lepidopedon* was found in *Sagitta sp.* from ketognat (Gibson and Bray, 1986). Sagitta was especially encountered in Black Sea and Mediterranean. *Opechona ollsoni* was encountered with high infection rate, 60– 0 % , near Gökçeada but not encountered near Antalya , so it is worth to study.

Table 1. Parasites species detected in Chub Mackerel caught around Gökçeada in May and their infection rates

The species found	N.F.I.	N.F.P.	T.N.P.	Abundance		Prevalence (%)
				Min.	Max.	
Myxobolus sp. cyist)	44	1	1	1		2.27
Octosoma scombri	44	14	17	1	4	31.81
Ectenurus lepidus	44	16	51	2	6	36.36
Opechona ollsoni	44	26	85	2	7	59.09
Lepidopedon elongatum	44	5	14	2	5	11.36
Contracaecum aduncum	44	5	23	3	7	11.36
Anisakis simplex	44	34	156	2	20	77.27
Lernaea sp.	44	4	4	1		9.09
General	44	42	371			95.45

N.F.I. : Number of Fish investigated N.F.P. : Number of Fish with Parasite T.N.P. : Total Number of Parasites

Table 2. Parasites species detected in Chub Mackerel caught around Gökçeada in September and their infection rates

The species found	N.F.I.	N.F.P.	T.N.P.	Abundance		Prevalence (%)
				Min	Max.	
Octosoma scombri	66	2	2	1		3.03
Ectenurus lepidus	66	18	102	3	25	27.27
Opechona ollsoni	66	45	288	2	20	68.19
Lepidopedon elongatum	66	7	41	3	10	7.58
Anisakis simplex	66	6	7	1	2	9.09
Lernaea sp.	66	12	13	1	2	18.18
Hatschekia sp.	66	1	1	1		1.52
General	66	52	454			78.79

Table 3. Parasites species detected in Chub Mackerel caught around Antalya in June and their infection rates

The species found	N.F.I.	N.F.P.	T.N.P.	Abundance		Prevalence ((%)
				Min.	Max.	
Myxobolus sp.(cyst)	48	1	1	1		2.08
Octosoma scombri	48	3	3	1		6.25
Ectenurus lepidus	48	3	10	2	5	6.25
Lepidopedon elongatum	48	4	17	2	7	8.33
Anisakis simplex	48	6	10	1	4	12.5
General	48	16	41			33.33

Table 4. Parasites species detected in Chub Mackerel caught around Antalya in August and their infection rates

The species found	N.F.I.	N.F.P.	T.N.P.	Abundance		P. (%)
				Min.	Max.	
Myxobolus sp. (cyst)	74	6	8	1	3	8.11
Octosoma scombri	74	3	3	1		4.05
Ectenurus lepidus	74	5	20	2	8	6.76
Lepidopedon elongatum	74	3	16	3	8	4.05
Anisakis simplex	74	3	4	1	2	4.05
General	74	17	51			22.97

Table 5. The values of polyparasitism

		N.F.I	with one species		with two species		with three species		with four species		with five species		Total N.F.P.	
			N	%	N	%	N	%	N	%	N	%	N	%
Around Gökçeada	May	44	7	15.91	16	36.36	12	27.27	5	11.36	2	4.55	42	95.45
	Sep.	66	23	34.85	21	31.82	6	9.09	2	3.03			52	78.79
Around Antalya	June	48	15	31.25	1	2.08							16	33.33
	Aug.	74	14	18.92	3	4.05							17	22.97

Lernaea sp. (Copepoda) which is encountered in the sea and freshwater in widely range and mortal with high infection (Stoskopf, 1993 ; Woo,1995) was found around Gökçeada , but not around Antalya.

Anisakis simplex (Nematoda) which can be contagious for human, was found with prevalence between 4-7 % around Gökçeada and Antalya . This parasite which was encountered widely in Mediterranean was also seen in species of Cephalopoda and many fish except Chub Mackerel. This parasite was found in 146 species of Cephalopa and fish in Mediterranean in some studies (Kruse and Pritchard, 1982 ; Paggi, *et al.*, 1998).

Özet

Bu çalışma Mayıs 2000–Eylül 2000 tarihleri arasında Gökçeada ve Antalya civarında gerçekleştirilmiştir. Gökçeada ve Antalya civarında avlanan 232 kolyoz balığında yapılan incelemelerde Gökçeada civarında 4 ü ektoparazit , 5 i endoparazit olmak üzere toplam 9 tür parazit bulunurken, Antalya civarında 2 si ektoparazit , 3 ü endoparazit toplam 5 tür parazit bulunmuştur. Gökçeada civarında Protozoon parazitlerden Myxobolus sp. , Monogenetik trematodlardan Octosoma scombri , Digenetik trematodlardan Ectenurus lepidus, Opechona ollsoni, Lepidopedon elongatum, Nematodlardan Anisakis simplex , Contracaecum aduncum , Copepod parazitlerden Lernaea sp. , Hatschekia sp. türlerine rastlanırken , Antalya civarında Protozoon parazitlerden Myxobolus sp., Monogenetik trematodlardan Octosoma scombri , Digenetik trematodlardan Ectenurus lepidus , Lepidopedon elongatum , Nematodlardan Anisakis simplex türlerine rastlanmıştır.

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