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Ecto-Endo Parasite Investigation on Mirror Carp (*Cyprinus carpio* L., 1758) Captured From the River Seyhan, Turkey

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Özet: ***Seyhan Nehri'nden avlanan sazan*** (Cyprinus carpio L., 1758)***'ların ekto- ve endo-parazitlerinin araştırılması.*** Bu çalışmada, Ocak 1996 ile Kasım 1997 yılları arasında Seyhan Nehiri'nden tutulan 130 adet aynalı sazan (*Cyprinus carpio* L., 1758)'daki ekto ve endo parazitlerin varlığının belirlenmesine çalışılmıştır. Aylar itibariyle 10'ar örnek incelenmiş, 86 (%66.15) bireyde ağır parazit invazyonu belirlenmiştir. Çalışmamızda, ekto parazit olarak, Monogenean trematodlardan; *Dactylogyrus vastator* Nybelin, 1924 ve *Gyrodactylus elegans* Nordmann, 1832, Crustacealardan *Argulus foliaceus* L., 1758**,** Protozoan parazitlerden; *Ichthyophthirius multifiliis*, Fouquet, 1876, ve *Trichodina nigra* Lom, 1961 bulunurken, Cestodlardan *Schistocephalus* sp. ve *Caryophylaeus* sp. endo parazit olarak belirlenmiştir.

Anahtar Kelimeler: Sazan, endo-parazit, ekto-parazit, Türkiye.

Abstract: The research was carried out in order to determine ecto and endo parasites of 130 mirror carp (*Cyprinus carpio*, L., 1758) catched from Seyhan River between 1996 and November 1997. During this period each month 10 mirror carps were sampled. 86 (66.15%) carps were heavily infested with the parasites. Ecto parasites such as Monogenean trematods; *Dactylogyrus vastator* Nybelin, 1924 and *Gyrodactylus elegans* Nordmann, 1832, Crustacean parasites; *Argulus foliaceus* L., 1758**,** Protozoan parasites; *Ichthyophthirius multifiliis*, Fouquet, 1876, and *Trichodina nigra* Lom, 1961, Cestodes such as *Schistocephalus* sp. and *Caryophylaeus* sp. were also found as endo parasites.

Key Words: Ectoparasites, Endoparasites, *Cyprinus carpio*, River Seyhan.

Introduction

The presence of parasites is, to a large extent, detrimental for a fish population and consequently, imposes high losses fish. Parasitic invasion on fishes may cause high mortality, weight losses and reduced fecundity (Grabda, 1991).

Protozoan, Cestoda, Nematoda, Trematoda and Crustacean parasites caused serious diseases on both cultured and wild fish species. These parasitic groups, block fish growth, prevent feeding activity. Especially in waters, contaminated with industrial and urban pollutants, poor water quality and lack of nutrition cause parasitic disease outbreaks. It is one of the most important rivers of the Southern Anatolia and is located in the middle of the Cukurova Savannahs and the Adana city. Although there has not been an extensive fish culture in the river, some fishing activities with fishing lines and nets can be seen in the region (Saracoglu, 1990). Some fish farms located at the region have been using the river as their pond water sources. Determining the parasitic species

in the Seyhan River will provide a better aquaculture conditions and will help to solve some of the problems of fish farmers. Therefore, in this study, ecto and endo parasites were exemined on mirror carp captured from the the Seyhan River.

Material and Methods

This study was carried out between January 1996 and November 1997 to determine ecto and endo parasites on mirror carp (*Cyprinus carpio* L., 1758) of the Seyhan River. Oxygen levels and water temperature were determined during the study. 75-meter gill net was used to catch monthly samples of fish. Each month 10 and total of 120 mirror carp were sampled. Captured fish were brought to the laboratory in plastic bags and kept alive in fiberglass tanks until the examination. Total length, weight were measured for each fish.

Ecto parasite examination; skin, gills, eyes and oral cavity samples were scraped (Woo, 1995; Roberts, 1989). All samples were examined with an Olympus CH_40 light microscope. The density of parasites was determined by counting in the infected areas. After the ectoparasitic examination carps were dissected and endo parasitic exemination was applied to Bullock (1989), Plumb and Bowser (1983), Wootten (1998), Grabda (1991) and Woo (1995); the appearance of internal organs were checked for haemorrhage, colour and size difference the gut contents were placed into a petri dish containing physiologic water and the samples were put on slide and examined under the light microscope.

The species of ecto and endo parasites were identified according to Woo (1995), Grabda (1991), Ekingen (1983) and Buchowsky *et al*. (1957).

Results and Discussion

Monogenean trematods; *Dactylogyrus vastator* Nybelin, 1924 and *Gyrodactylus elegans* Nordmann, 1832, Protozoan parasites; *Ichthyophthirius multifiliis* Fouquet, 1876 were found on the gills and the other Protozoan parasites; *Trichodina nigra* Lom, 1961 and Crustacean parasites; *Argulus foliaceus* L., 1758 were found during the skin examination.

There were not any parasitic infestation in the oral cavity and eyes and also we could not find any parasite in the body fluid and blood preparations. Cestoda; *Schistocephalus* sp. and *Caryophylaeus* sp.were found in the gut contents. Average length, weight values of carps and the water temperature and oxygen levels with the infestation range parameters are given in Table I.

Singhal *et al*. (1984), examined the parasitic fauna of mirror carp, rainbow trout (*Onchorhyncus mykiss* Wallbaum, 1793) and also pike (*Esox lucius* Linneaus, 1758*)* and found *I. multifiliis* on the skin mucous of mirror carp, *Gyrodactylus* sp. on rainbow trout skin mucous and *Argulus* sp. from the skin and gills of pike. Topcu and Tasçı (1983) examined the gut contents of *C. carpio* living in the Van region, Turkey. They sampled *C. carpio* each month during two years and collected the macroscopic parasites. They reported that 50.3% of 254 fish were infested with the helminthes. In our study we determined the same species of Cestoidea on Seyhan River. Cengizler and Goksu (1994) determined the trematoda *Dactylogyrus vastator* Nybelin, 1924 and the Copepoda, *Ergasilus sieboldi* Nordman, 1832 on two Cyprinidae species living in the Balikliag Creek, Adana, Turkey.

Quang (1988) studied the parasitic fauna of the Cuulong River, Vietnam during 12 years and he sampled 3113 fish specimens. Group of the parasites were

Monogeneans (%31.6), Myxosporideans (%14.2), Nematoda (%10.3). He also pointed out that herbivorous and omnivorous fish species were heavily infested in comparison with carnivorous fishes. In our study the Metazoan parasites were Monogenean trematoda 58.46%, Cestoda 34.62%, Crustacea 7.69%, and Protozoan parasites 10.77%. In addition to these results we could not found fish born parasites that hazardous to human health. Finally the result of the study showed that the parasitic fauna of the *Cyprinus carpio* in the Seyhan River could cause fish health problems.

Table 1. Ecto and endo parasites of *Cyprinus carpio* L., 1758 from the Seyhan River

Year	Month	Ave. L. (cm)	Ave. W.(g)	Fish # (n)	Infested Fish Number	Protozoa		Trematoda		Crus-tacea	Ces-toda	Temp (^oC)	O_2 (mg/l)
						skin	gill	skin	gill	skin	gut		
1996	Jan.	19.3	170.0	10	8	--	--	D*	--	--	--	9.0	12.0
	Jul.	11.4	27.33	10	5	--	--	--	D**	A**	--	24.8	6.0
	Aug.	9.0	24.0	10	5	--	--	--	D**	A**	S*	28.0	6.0
	Sep.	21.87	223.0	10	6	--	--	--	D**	--	S**	27.0	7.8
	Oct.	25.0	156.0	10	4	T*	--	--	G*	--	C**	24.0	6.0
	Nov.	24.4	210.0	10	4	--	--	--	D**	--	--	10.	11.3
∑		--	--	60	32	--	--	--	--	--	--	--	--
1997	May	20.5	145.5	10	4	--	--	--	G*	--	--	19.0	8.0
	June	29.9	483.8	10	--	--	--	--	--	--	--	21.5	7.9
	July	16.11	175.8	10	10	--	--	--	D**	--	--	24.0	6.6
	Aug.	14.29	58.5	10	20	--	--	--	D**	--	S**	28.0	5.9
	Sep.	16.25	89.9	10	--	--	--	--	--	--	--	27.0	5.9
	Oct.	15.5	61.9	10	10	--	--	--	--	--	S*	23.0	6.1
	Nov.	11.0	25.2	10	10	--	I*	G**	--	--	--	10.5	11.0
∑		--	--	70	54	--	--	--	--	--	--	--	--

*Not heavly infested (< 5 parasites) ** Heavly infested (< 5 parasites) **D:** *Dactylogyrus vastator* Nybelin, 1924
G:*Gyrodactylus elegans* Nordmann, 1832 **I:** *Ichtyopthirius multifiliis*, Fouquet, 1876 **T:** *Trichodina nigra* Lom, 1961
A: *Argulus foliaceus* L., 1758 **C:** *Caryophylaeus* sp. **S:** *Schistocephalus* sp.

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