

Parasites of ornamental fish in Turkey

C. Erkin Koyuncu*

¹Mersin University, Faculty of Fisheries, Department of Aquaculture, Yenisehir Kampüsü, 33169 Mersin, Turkey.

Abstract

Six commonly freshwater ornamental fish, namely *Poecilia reticulata* (guppy); *Poecilia sphenops* (black molly); *Cichlosoma* sp. (Cichlidae); *Xiphophorus maculatus* (platy); *Carassius auratus* (goldfish) and *Symphisodon discus* (discus) were examined for parasites during a four years study (1998-2002) in Turkey. The parasites species found included: *Ichthyobodo* sp., *Ichthyophthirius multifiliis*, *Chilodonella* sp., *Trichodina* sp., *Dactylogyrus extensus*, *Gyrodactylus bullatarudis*, *Lernaea cyprinacea*, *Argulus foliaceus*, *Argulus japonicus* and *Capillaria* sp. Among the fish that were studied, goldfish had highest infections.

The ornamental fish industry in Turkey has grown in recent years. Most of these fish are imported from Asian countries. The occurrence of parasites in ornamental fish in Turkey has not previously been well studied. In this study we aimed to diagnose the parasites in freshwater ornamental fish and so determine the prevalence of some of these parasites within the Turkey industry.

Materials and methods

Samples of fish were taken at two ornamental fish farms every month between 1998 and 2002. Routine laboratory examinations, as well as examination of wet mount of skin and gills direct examination were performed. Subsequently, fish were anaesthetized in a solution of MS222, pithed, killed and complete parasitological examination

Fish species	Fish family	No. Fish examined	No. Fish infected
<i>Poecilia reticulata</i>	Poeciliidae	130	75
<i>Xiphophorus maculatus</i>	Poeciliidae	125	25
<i>Poecilia sphenops</i>	Poeciliidae	110	55
<i>Cichlosoma</i> sp.	Cichlidae	74	18
<i>Carassius auratus</i>	Cyprinidae	245	155
<i>Symphisodon discus</i>	Cichlidae	75	24
Total		759	371

Table 1. Ornamental Fish examined for parasites.

*Corresponding author's E-mail: ekoyuncu@mersin.edu.tr

undertaken. Parasites were counted and measured fresh, then permanently mounted where possible. Ciliates and flagellates were preserved in Bouin's fixative. Monogenea were fixed in ammonium picrate or glycerin jelly and stained using carmine.

Results

Six of the most frequently imported ornamental fish species were studied: *Poecilia reticulata* (guppy); *Poecilia sphenops* (black molly); *Cichlosoma* sp. (Cichlidae); *Xiphophorus maculatus* (platy); *Carassius auratus* (goldfish) and *Symphisodon discus* (discus). Numbers and types of parasites found were determined are given in Tables 1 and 2. Ten species of parasites were identified. The parasites detected represent two monogeneans, four protozoans, one copepod and two branchiurans one nematode. Among the fish studied goldfish showed highest parasite infestation and high stocking density, thus high mortality was observed, particularly caused by ichthyophthiriosis and gyrodactylosis.

Discussions

Goldfish and carp are infected by a wide variety of parasites (Stoskopf, 1993). Few studies have demonstrated parasite infections associated with mortality. However ichthyophthiriosis is one of the most common diseases of freshwater fish. All freshwater fish are susceptible to infections (Woo, 1995). The main cause of these infections and mortality in studied fish overcrowding, malnutrition, poor water quality introduction of new infected fish to the aquarium.

Many of the huge number of parasites that have been isolated from aquarium fish in Turkey, are capable of including significant mortalities among captive and wild stocks, especially parasites which do not need an intermediates host, such as protozoan and Monogenea (Wildgoose, 2001). Isolated parasites in this study may be transferred from cultivated and wild fish to aquarium fish to Turkey with imported ornamental fish, especially *Lernea cyprinacea*, *Chilodonella* sp., *Dactylogyrus extensus*, *Argulus foliaceus* and *Argulus japonicus* in fancy goldfish, *Gyrodactylus bullatarudis* in guppy, and *Capillairia* sp. in discus.

Few of the parasites from fish Asia and Southern America have been described (Moravec et al., 1997). Thus many undescribed parasites could be entering importing countries with imported fish. Exporting conditions in the aquarium industry allow parasites with a direct – live cycle to attain a high prevalence of infection, assuming environmental conditions are conducive. Treatment of fish prior to export or upon arrival in an importing country will minimise the risk of future parasite entry and further parasite dispersal.

Mousavi (2003) studied parasites of ornamental fish imported in Iran and reported thirteen parasite species. Other investigation and authors (Stoskopf, 1993; Woo, 1995; Fairfield, 2000; Evans and Lester, 2001; Noga, 2001) have been described many of isolated parasites in this study, which can infect ornamental fish of many species.

Parasites Species	Parasite Phylum (class)	Fish species	Mean prevalence (%)
<i>Ichthyobodo</i> sp.	Protozoa (Ciliata)	<i>Carassius auratus</i>	0.9
<i>Ichthyophthirius multifiliis</i>		<i>Poecilia reticulata</i>	14.9
		<i>Poecilia sphenops</i>	
		<i>Cichlosoma</i> sp.	
		<i>Xiphophorus maculatus</i>	
		<i>Carassius auratus</i>	
		<i>Carassius auratus</i>	
		<i>Poecilia reticulata</i>	
		<i>Poecilia sphenops</i>	1.1
<i>Trichodina</i> sp.		<i>Cichlosoma</i> sp.	13
		<i>Xiphorus maculatus</i>	
		<i>Carassius auratus</i>	
		<i>Symphisodon discus</i>	
<i>Gyrodactylus bullatarudis</i>	Platyhelminthes (Monogenea)	<i>Poecilia reticulata</i>	11
<i>Dactylogyrus extensus</i>		<i>Carassius auratus</i>	1.5
<i>Capillaria</i> sp.	Platyhelminthes (Monogenea)	<i>Symphisodon discus</i>	1.5
<i>Lerne cyprinacea</i>	Arthropoda (Copepoda)	<i>Carassius auratus</i>	1.2
<i>Argulus foliaceus</i>	Branchiura	<i>Carassius auratus</i>	0.7
<i>Argulus japonicus</i>	Branchiura	<i>Carassius auratus</i>	0.8

Table 2. Parasites found in studied Ornamental fish.

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