

## Identifying and Detecting the Fish Crustacean Parasites of Hasanlou Reservoir Dam Lake in Naghadeh

Human Shafipour<sup>1</sup>, Fatemeh Ghahremani<sup>2</sup>, Reza Safanavaee<sup>3</sup>, Polin Shohre<sup>4</sup>, Afshin Esmaili Dahesh<sup>1\*</sup>, Davoud Nasiri<sup>5</sup> and Abbas Tavakoli Vaskas<sup>3</sup>

<sup>1</sup>Department of Aquatic Animal's Health and Disease, Science and Research Branch, Islamic Azad University, Tehran, Iran.

<sup>2</sup>Department of General Veterinary, Science and Research Branch, Islamic Azad University, Tehran, Iran.

<sup>3</sup>Department of Food Science and Technology, Ayatollah Amoli Branch, Islamic Azad University, Amol, Iran.

<sup>4</sup>Department of Aquatic Animal Health, Faculty of Veterinary Medicine, Tehran University, Tehran, Iran.

<sup>5</sup>Department of Veterinary Sciences, Naghadeh Branch, Islamic Azad University, Naghadeh, Iran.

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The study focuses on determining and identifying the fish crustacean parasitic infestation of Hasanlou reservoir Dam Lake in Naghadeh in 2011-12. Five species of fish including *Cyprinus carpio Linnaeus*, *tecopharyngodon idella valenciennes*, *Leuciscus cephalus* L., *Capoeta capoeta* Goldenstad, and *Hypophthalmichthys nobilis* were selected for the study. During 4 times sampling, 150 samples were taken and transported live to the laboratory on which different parts from skin, fins and gills were examined for their appearance and fish crustacean parasitic infestation by using a microscope and a loop. In order to preserve and accurately identify the samples, preservatives were used by maintaining the contemporary techniques and mechanisms. Regarding the type of analysis, which were done, it was found that 36% of the fish under study were somehow infected with crustaceans parasitic infection including *Ergasilus*, *Lernaea cyprinacea*, and *Tracheiastes polycolpus*. The degree of infestation was at its highest degree in summer with 22% and at its lowest level 9.33% in winter among which the highest and lowest frequencies of the infestation were related to the *Ergasilus* and *Tracheiastes polycolpus* with 42.59 and 20.37%, respectively.

**Key words:** Fish parasites, crustaceans, Hasanlou Dam, Naghade, Iran.

The dam is located in 11 km northeast and 6 km west of Urmia lake and has lake behind the dam which covers an area around 1000 acres, and is situated in the northern plains of Hasanlou village and is regarded as one of the most important soil dam in the country which can hold up to 100 million cubic meters of water in and has an average depth of 14 m. Godar river "Godarrud" is originated from Oshnavieh hills and mountains chain on the

border s of Iran with Iraq and Turkey and passes the city on the northern side and the river water is transferred to the lake with canals made from concrete and its surplus at the end of its path falls into the Urmia lake. Among different fish parasites, crustaceans and leeches in a way that sometimes crustaceans or leeches cause the death of a small fish (larva) and their swarming in the water will cause a wholesale mass murder of the fishes, which reduces the economic value and will reduce their marketability (Abdi *et al.*, 1995), cause most injuries and mortalities. The identified and removed fish crustaceans were *Lamproglena*,

\* To whom all correspondence should be addressed.  
E-mail: Afshienesmaili61@gmail.com

*Pseudotrachealiastes*, *Ergasilus*, *Lernaea cyprinacea*, and *Trachealiastes* (Mokhayer, 1995; Rahmani *et al.*, 2012a; Rahmani *et al.*, 2012b; Rajan and Revathi, 2011; Ranjan, 2011; Ozoko, 2012).

Another parasitic crustacean of fishes observed in Iran is *Ergasilus*. It includes over 80 species of parasites in the freshwater and sea. Their general body shape is similar to *Cyclopses* and their head is considerably large. Some species of this kind have been reported to exist in common Cyprinidae, *Barbus sharpeyi*, *Barbus luteus*, *Aspius vorax* in Huralazim wetlands (Jalali Jafari, 1998). The parasite from the local fishes could possibly be transferred to farmed fishes and because this parasite is new to the fishes and due to lack of proper resistance, the parasites will bring about lots of diseases and mortality for the fish (Moghnimi and Abbasi, 1995; (Mokhayer, 1995; Rahmani *et al.*, 2012a; Rahmani *et al.*, 2012b; Rajan and Revathi, 2011; Ranjan, 2011; Ozoko, 2012).

Focusing on the parasites life cycle and intermediate hosts' role in the aquatic environment and their biological control is one of the most important and very interesting fact in ecology. Regarding the development and improvement in the farmed fish industry in West Azerbaijan province and the possible transfer of parasitic infestation of the local fishes to farmed fishes, the parasitological studies seem necessary. Generally, the parasite has a direct relationship with the following issues including host living area, host age, seasonal changes, climatic changes, fish dietary, fish physiology and morphology, geographical factors, host fish

migration, fish loads and parasite and host life cycle synchronization (Jalali Jafari, 1998). The study is a step to identify the fish parasites to provide the ground for the further researches on the interrelation between the fishes and parasites and the parasitic infestation effect on the fish resources of the lake.

## MATERIALS AND METHODS

The sampling was conducted in spring 2011 in which five different species samples were taken in table 1. The fishes were caught by big fishing net, fish traps, and wing nets and were put into the aired containers and transferred to the laboratory live. The required information such as fishing dates and locations, species and number of fish and other biometric features were recorded in special forms. The analysis for the parasitological examination was conducted on the outer body parts and bronchitis using different head stroke and after anesthetizing the fishes, which were killed for the parasitic crustaceans' analysis. The wet lams were taken directly from different parts of the skin, fins, and gills and were studied and analyzed by microscopes at different magnification levels. Because most crustaceans attach themselves to the external members of the fish, their separation was performed using a forceps. The isolated crustacean parasites were stored in formalin 4% for accurate identification the Identification of the parasite species were conducted using the Fernando *et al.*, 1972 and others (Gusseu, 1983; Lom and Dykova, 1992; Moghnimi and Abbasi, 1995).

**Table 1.** The fish species studied in Hasanlou reservoir dam in Naghadeh

No.	Scientific names
1.	<i>Cyprinus carpio</i> Linnaeus, 1758
2.	<i>Ctecopharyngodon idella valenciennes</i> in Cuvier & valenciennes, 1844
3.	<i>Capoeta capoeta</i> Goldenstad, 1772
4.	<i>Leuciscus cephalus</i> Linnaeus, 1758
5.	<i>Hypophthalmichthys nobilis</i> Richardson, 1845

**Table 2.** Prevalence of parasitic infestation of fish in different seasons

Total sample size	Summer	Fall	Winter	Spring	Infestation %
150	33(22%)	22(14.66%)	14(9.23%)	27(18%)	54(36%)

**Table 3.** Crustacean parasitic infestation frequencies of fish in different species

Total	Leuciscus cephalus			Capoeta capoeta			Ctenopharyngodon idella valenciennes			Hypophthalmichthys nobilis			Cyprinus carpio						
	<i>Ergasilus pergrinus cyprinacea</i>	<i>Lernaea Trachelastes</i>	Total	<i>Ergasilus pergrinus cyprinacea</i>	<i>Lernaea Trachelastes</i>	Total	<i>Ergasilus pergrinus cyprinacea</i>	<i>Lernaea Trachelastes</i>	total	<i>Ergasilus pergrinus cyprinacea</i>	<i>Lernaea Trachelastes</i>	total	<i>Ergasilus pergrinus cyprinacea</i>	<i>Lernaea Trachelastes</i>	total				
24(44.44%)	5	8	11	16 (29.62%)	2	9	5	4(7.40%)	1	2	1	4(7.40%)	1	1	2	6(11.11%)	2	-	4

**Table 4.** Degrees of frequencies to different crustacean parasitic infestations

Parasitic infestations	infestation number & percentage	<i>Ergasilus peregrines</i> Infestation	<i>Lernaea cyprinacea</i> Infestation	<i>Tracheliastes</i>
<i>Leuciscus cephalus</i>	24(44.44%)	11(47.82%)	8(40%)	5(45.45%)
<i>Capoeta capoeta</i>	16(29.62%)	5(21.73%)	9(45%)	2(18.18%)
<i>Cyprinus carpio</i>	6(11.11%)	4(17.39%)	-	2(18.18%)
<i>Hypophthalmichthys nobilis</i>	4(7.40%)	2(8.69%)	1(5%)	1(9.09%)
<i>Ctecopharyngodon idella valenciennes</i>	4(7.40%)	1(4.37%)	2(10%)	1(9.09%)

It seems that the *Lernaea cyprinacea* outbreak was promoted by pouring the *Cyprinus carpio* larvae into the lake. A report earlier on the epidemic *Lernaea cyprinacea* infestation in Zarivar has also been reported to be severe which could not be consumed as a food source and closer identification revealed that all the infected types belonged to the local fishes of the region. Several different species of *Tracheliastes* are able to inflict different *Cyprinus carpio* species and because of such features, it can be dangerous for fish especially for *Cyprinus carpio*. Some species of this parasite including *Sachalinensis* and *T. longicollis* and *T. polycolpus* stick and attach themselves to the fins and only one species attach itself to the skin, which is *mocolotus*.

The *T. polycolpus* enjoys a wider range of host in the fish family and has been seen in different *Cyprinus carpio* especially in the *Leuciscus cephalus* and it appears that this species often infect *Lucycus* and *Cyprinus carpio*. In a study conducted by Abdi *et al.*, in 1995, *Tracheliastes* isolated from the *Capoeta capoeta* (24.84%) was not seen in the outer and abdominal fins and the tail fins had the highest infection rate. However, in this study, the total fin infestation was observed in *Capoeta capoeta* and the abdominal fins had the highest infestation rate. In addition, the same degree of infestation was also observed in *Leuciscus cephalus* (Abdi *et al.*, 1995). The development of modern intensive fish farms has amplified the fish production for human consumption and new products. However, the dense and excessive aquaculture has caused different species of parasitic absorption, which has threatened the fish health, but such symptoms were not observed in this study. Regarding the fact that the crustacean parasites were observed in all

seasons but their severity was the highest in spring and summer and because this parasite has different forms in the aquaculture, they attack various hosts as the water gets warm ((GusseV, 1983; Hakalahti and Valtonen, 2003; Lom and Dykova, 1992).

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