

## The External Parasites of the Common Carp (*Cyprinus Carpio*) in Technical Institute of Al – Mussayab Fish Farm

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### Abstract

During the period from January 2005 till December 2005, a total of 240 Common carps (*Cyprinus carpio*) from Technical Institute of AL–Mussayab fish farm were inspected for ectoparasites. The following parasites and their percentage incidences of infection and Mean intensity of infection were recorded : *Ichthyophthirius multifiliis* (%28.3, 10.5), *Trichodina domerguei* (%18.7, 11) , *T. cottidarum* (%21.2, 10.9), *T. nigrs* (%12, 7.3), *Glossatella amoebae* (%11.2, 4), *Apiosoma pisciola* (% 16.2, 5.3), *Dactylogyrus arcutus* (% 7.5, 18), *D. Minutus* (%1.6, 8.7), *D. Achamerowi* (% 2.5, 10.3), *D. extensus* (% 34.3, 6.2), *D. solidus* (% 11.6, 7.0), *D. lipochina* (% 5, 8.5), *D. amurensis* (%2.9, 5.4), *D. carassus* (% 12.9, 4.6), *Gyrodactylus elegans* (%3.7, 5.7), *Ergasilus sieboldi* (%11.8, 7.8) and *Lernaea cyprinacea* (% 9.5, 6.4).

The study revealed abundance of the parasites, which have direct life cycles to occurrence of specific species of parasites with low percentage incidence and mean intensity of infection. Finally the study revealed that some fishes are highly host specific to some parasite in general.

الطفيليات الخارجية على أسماك الكارب الإعتيادي في مزرعة أسماك المعهد التقني  
المسيب

### الخلاصة

تم خلال المدة من كانون الثاني 2005 ولغاية كانون الأول 2005 فحص 240 سمكة كارب اعتيادي من مزرعة أسماك المعهد التقني في المسيب بحثاً عن الطفيليات الخارجية. تم العثور على الطفيليات الآتية مع نسب وشدة ظهورها على التوالي *Ichthyophthirius multifiliis* (% 28.3, 10.5), *Trichodina domerguei* (% 18.7, 11), *T. cottidarum* (% 21.2, 10.9), *T. nigrs* (% 12, 7.3), *Glossatella amoebae* (% 11.2, 4), *Apiosoma pisciola* (% 16.2, 5.3), *Dactylogyrus arcutus* (% 7.5, 18), *D. minutus* (% 1.6, 8.7), *D. achamerowi* (% 2.5, 10.3), *D. extensus* (% 34.3, 6.2), *D. solidus* (% 11.6, 7), *D. lipochina* (% 5, 8.5), *D. amurensis* (% 2.9, 5.4), *D. carassus* (% 12.9, 4.6), *Gyrodactylus elegans* (%3.7, 5.7) *Ergasilus sieboldi* (% 11.8, 7.8) and *Lernaea cyprinacea* (% 9.5, 6.4).

بينت نتائج الدراسة الحالية انتشار الطفيليات من ذوات دورات الحياة المباشرة بنسب وشدة أصابات منخفضة، وإن هناك تخصصاً مضيئاً لبعض الطفيليات بصورة عامة.

### Introduction

With the increasing demand for fish as a valuable protein source, freshwater fish production was greatly enhanced during the last few decades to meet this task. The progress in fish culture technology resulted in new problems of fish health. Intensive fish culture, together with polyculture and poor management are responsible for the spread of some parasites especially the ectoparasites which have direct life cycles (Bauer *et al.* 1969).

Common carp (*Cyprinus carpio* L. 1758) is one of the world's most commonly cultured freshwater fish, the carp making up the largest group of cultured fish in terms of the product value. Not surprisingly, the production of carp has shown an increase during the last 20 years (Jene Jeney, 1995).

Fish parasites form interesting and little-used subjects for studies on communities and their ecology. Although they tend to be poorer in terms of species diversity than, for example, parasite communities in birds (Kennedy *et al.* 1986), there are species rich communities such as these on the gills (Koskivaara *et al.* 1992), Parasite abundance can also be high. The advantage of studying communities of moderate species diversity is that it is easier to interpret the observed phenomena and the inter and interspecific relationships (Kennedy, 1990).

The importance of fish parasites is related directly to the importance of the fish that they may affect. Therefore, it is important from an economic point of view for fish farming, that we have acknowledge of

occurrence of parasites on our freshwater and pond fishes. Once we have a sound background knowledge, it may at least be possible to control some of the more harmful parasites (Ali *et al.* 1988).

## Materials and Methods

Common carps of different lengths were sampled from different earthen and concrete ponds from Technical institute of AL-Mussayb fish farm, about 40 kilometers to the north of Hilla city center. They were examined for ectoparasites.

Some of the breeders, during their preparation for the artificial propagation in the fish hatchery, were also examined for any parasitic infestation. Skin, Gill and fins smears were prepared and microscopically examined.

Parasites were stained with aqueous neutral red and permanent slides were prepared. To avoid terminology confusion, Ergens's paper (Ergens, 1977). Ectoparasites were identified according to Bykhovskaya-Pavlovskaya *et al* (Bykhovskaya-Pavlovskaya *et al.* 1962). And Gussev (Gussev, 1985).

## Results

During the period from January 2005 to December 2005, a total of 240 common carps were surveyed for external parasites including five breeders. Their total length varied from 13.2–32.6 cm, and total weight from 34.9–160.7 gm. Seventeen parasite species were detected. These together with their percentage incidence and mean intensity of infection and site of infection are shown in table (1, 2). All these species are known to infect carps in different fish farm of mid Iraq.

**Table (1): External parasites of *C. carpio* of Technical Institute of AL-Mussayab fish farm**

Parasite group and species	% Incidence of infection	Mean intensity of infection	Site of infection
Ciliata			
1. <i>Ichthyophthirius multifiliis</i>	28.3	10.5	S, F, G
2. <i>Trichodina domerguei</i>	18.7	11	S
3. <i>T. cottidarum</i>	21.2	10.9	S, F, G
4. <i>T. nigrs</i>	12	7.3	S
5. <i>Glossatella amoebae</i>	11.2	4	S
6. <i>Apiosma pisciola</i>	16.2	5.3	S, G
Monogenea			
1. <i>Dactylogyrus arcutus</i>	7.5	18	G
2. <i>D. minutus</i>	1.6	8.7	G
3. <i>D. achamerowi</i>	2.5	10.3	G
4. <i>D. extensus</i>	34.3	6.2	G
5. <i>D. solidus</i>	11.6	7	G
6. <i>D. lipochina</i>	5	8.5	G
7. <i>D. amurensis</i>	2.9	5.4	G
8. <i>D. carassus</i>	12.9	4.6	G
9. <i>Gyrodactylus elegans</i>	3.7	5.7	S
Crustacea			
1. <i>Ergasilus sieboldi</i>	11.8	7.8	G
2. <i>Lernaea cyprinacea</i>	9.5	6.4	S, F, G

Site of infection: G: gills, S: skin, F: fins.

**Table (2): Percentage incidence of infection of different length groups of *C. carpio* with three groups of parasites in Technical Institute of AL-Mussayab fish farm**

Fish length group (cm)	No. examined fishes	No. infected fishes and % incidence of infection with:					
		Ciliata		Monogenea		Crustacea	
		No.	%	No.	%	No.	%
13 - 16	29	12	41.37	19	65.51	0	00
17 - 20	51	19	37.25	34	66.66	5	9.8
21 - 24	97	28	28.86	64	65.97	9	9.27
25 - 28	45	16	35.55	31	68.88	6	13.33
54 - 65	18	4	22.22	7	38.88	2	11.11
Total (mean)	240	79	(32.9)	155	(64.6)	22	(9.2)

## Discussion

The protozoans of present study included common parasites (*I. multifiliis*, *T. domerguei*) of carps from many fish farms of mid Iraq (Mhaisen, Unpubl.) and from Babylon fish farm near Hilla city, which is now know as AL-Furat fish farm (Al-Zubaidy, 1998; Ali *et al.* 1989) including AL-Zeafaraniya fish farm (Al-Hamed & Hermiz, 1973). So as reported from AL-Amiriya fish farm (Al-Nasiri, 2000), including AL-Eskandaryia fish farm (Muhammed, 2000). The first ectoparasite (*I. multifiliis*) of the present study occurred in AL-Shark Alawst fish farm (Hussain, 2005).

The third one (*T. cottidarum*) was reported from pond fishes in AL-Zawraa park in Baghdad city (Abdul-Ameer, 2004) and from AL-Shark Alawst fish farm (Hussain, 2005). So, *T. nigrs* of the present study occurred in AL-Furat fish farm (Al-Zubaidi, 1998), and Al-Amiriya fish farm (Al-Nasiri, 2000). The fifth one (*Glossatella amoebae*) was reported earlier on AL-zaafaraniya fish farm (Al-Aubaidi *et al.* 1999), so as reported from Al-Amiriya fish farm (Al-Nasiri, 2000). The sixth one (*Apiosoma pisciola*) was reported from Habbaniyah lake (Ali *et al.* 1988).

It is generally accepted that the infection with most protozonans which enter their hosts via skin increases with the increase of fish length due to the large surface area of the fish exposed to the external parasites (Dogiel, 1961). The absence of any significant differences in the relation of the present study is mainly due to the fact that fishes of the present study were mainly of small to medium sizes (table 2).

The monogeneans of the common carps included eight species *Dactylogyrus* and one species of *Gyrodactylus* (table 1). These four generea are common among cultured carp every where (Al-Zubaidy, 1998). Generally, *Dactylogyrus* spp are gill parasites while *Gyrodactylus* spp are skin parasites (Duijn, 1973). This fact is also clear from table (1). This is attributed to the highest percentage incidence of infection (34.3), and the high intensity of infection as these parasites become crowded in the gill, they may spread to most parts of skin region (Duijn, 1973). Some of the presently reported monogeneans are known to be harmful to their hosts and may cause their death. Examples are *D. extensus* and *D. minutus* (Bauer *et al.* 1969; Buchmann *et al.* 1993). Most of the nine monogeneans of the present study had been recorded from different fish farms of mid Iraq (Mhaisen, Unpubl.), including Technical Institute AL-Mussayab fish farm.

As explained with the protozoans, also there were no any significant differences between the overall percentage incidence of infection with the monogeneans of the present study and fish length. This is mainly due to the small to medium sizes of the examined fishes. However, with wide range of fish length. One might expect a significant increase in infection with increasing fish length (Dogiel, 1961). With such case AL-zubaidy (Al-Zubaidy, 1998) showed significant differences in the infection of the common carps of AL-Furat fish farm with both *D. vastator* and *G. elegans*. Also, he demonstrated significant differences in the infection of the grass carp with *D. inexpectatus*, *D. ctenopharyngodontis*, *D. lamellatus* and *G. elegans* as well as the infection of silver carp (*Hypophthalmichthys molitrix*) with *D. vastator*.

The crustacea of common carps in the present study included one species of *Ergasilus* and one species of *lerna* (table 1). This pest was reported from many fish farms in mid and south Iraq (Muhammed, 2000) including AL-Zaafaraniya fish farm (Al-Hamed & Hermiz, 1973). So as including AL-Amiriya (Al-Nasiri, 2000). The second parasite including AL- region (Babylon) (Mhammed, 2000).

The lower percentage incidence of infection of the common carp of the present study with the anchor worm (9.2) did not permit having a clear demonstration for the type of relationship between fish length and infection. As most examined fishes were of small to medium sizes, no significant differences were noted. However, in cases of wide ranges of fish length groups, an increase infection is expected with such external parasite (Dogiel, 1961).

Finally, it can be concluded that the common carp of institute of Al-Mussayab fish farm was infected with 17 ectoparasite species. Most infections were light and had no dramatic effects on the infected carps.

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