

Parasites of Fishes Collected from Tigris River, Salah Al-Deen Province, Iraq

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Abstract

A total of 109 fish specimens belonging to six species (*Barbus grypus*, *B. luteus*, *B. xanthopterus*, *Cyprinion macrostomum*, *Cyprinus carpio* and *Liza abu*) were collected from Tigris river passing through Salah Al-Deen province during the period from September 2008 till January 2009. These fishes were infected with nine parasite species which included two sporozoans (*Myxobolus mülleri* and *Dermocystidium percae*), three ciliates (*Trichodina cottidarum*, *T. elegini* and *T. murmanica*) and four monogenetic trematodes (*Dactylogyrus rhodeianus*, *D. vastator*, *Paradiplozoon cyprini* and *Microcotyle donavini*). Among these parasites, two trichodinids (*T. elegini* and *T. murmanica*) were reported for the first time from fishes of Iraq. Also, *B. grypus* is considered as a new host in Iraq for both *D. percae* and *M. mülleri*. Apart from *D. vastator* and *P. cyprini*, all the remaining seven parasite species were recorded here for the first time from fishes of Salah Al-Deen province. Among the inspected fishes, both *B. grypus* and *L. abu* harbored the highest number of parasite species (three each), followed by *C. carpio* (two parasite species) and *B. luteus* (one parasite species).

Introduction

As parasites are among the deleterious factors in growth and other life aspects of fishes (1, 2), the knowledge of the parasitic fauna of fishes is so important to take measures for their control (3). For this reason, surveys are conducted everywhere to gain basic knowledge on the parasitic fauna of fishes.

According to Mhaisen (4), a total of 216 reports are available on the parasites of freshwater fishes of Iraq (exclusive of 88 reports on parasites of farm fishes). Among such reports, only four were done on the parasitic fauna of fishes of Salah Al-Deen province (5, 6, 7, 8) in addition to three reports which included some data on parasites of fishes of this province (9, 10, 11). These seven reports represent 3.2% of the total number of reports on parasites of freshwater fishes of Iraq (exclusive of those of farm fishes). This percentage is so

low in comparison with 35.2% for Basrah province or even with 27.3% for the neighboring province of Nineva. The scarce information on the parasitic fauna of fishes of Salah Al-Deen province was behind the task of conducting the present study.

Materials and Methods

During the period from September 2008 till January 2009, fish samples were collected from Tigris river passing through Salah Al-Deen province at Al-Alam and Albu-Ajeel regions, about 4-5 km east of Tikreet city. Gill nets (mesh size of 2.5, 4.5 and 6.5 cm) and cast nets (mesh size 1.5 cm) were used.

Fishes were examined for parasites according to Amlacher (1). Skin and gill smears were prepared and microscopically examined. Upon dissection of these fishes, their body cavity and all internal organs were inspected for internal parasites. Squashes from some internal organs were also prepared and examined for any internal parasites. Parasite identification followed Bykhovskaya-Pavlovskaya *et al.* (13), Shul'man (14) and Gussev (15). The index catalogue of parasites and disease agents of fishes of Iraq (4) was followed to indicate the number of host records for each parasite species in order to minimize the number of references for each parasite species. Coad's (12) list was followed for the scientific names of the captured fishes.

Results and Discussion

During the present investigation, a total of 109 fish specimens were collected. These included 12 *Barbus grypus* Heckel, 30 *B. luteus* (Heckel), four *B. xanthopterus* (Heckel), 24 *Cyprinus carpio* L., five *Cyprinion macrostomum* Heckel and 34 *Liza abu* (Heckel).

The parasitological inspection of these fishes revealed their infection with nine species of parasites. These parasites included two species of sporozoans (*Myxobolus mülleri* and *Dermocystidium percae*), three ciliates (*Trichodina cottidarum*, *T. elegini* and *T. murmanica*) and four monogenetic trematodes (*Dactylogyrus rhodeianus*, *D. vastator*, *Paradiplozoon cyprini* and *Microcotyle donavini*). The following is a brief account on the occurrence of these parasites together with a detailed description and measurement of the two newly recorded trichodinid species in Iraq.

***Myxobolus mülleri* Bütschli, 1882:**

Spores of this sporozoan were detected in the present study from gills and liver of *B. grypus* with an incidence of 25%. This parasite was reported for the first time in Iraq from *B. xanthopterus* by Herzog (16) who gave no incidence of infection. Three other hosts were

reported, later, for this parasite in Iraq: *B. luteus* and *L. abu* by Al-Nasiri (17) from a man-made lake, Baghdad with an incidence of 7.5% and 0.3%, respectively and from *C. carpio* by Al-Zubaidy (18) from a fish farm in Babylon province with an incidence of 1%. So, *B. grypus* of the present study represents the fifth host for *M. mülleri* in Iraq and its first record from fishes of Salah Al-Deen province. According to Mhaisen (4), a total of 29 species of *Myxobolus* are, so far, known from freshwater fishes of Iraq.

***Dermocystidium percae* Reichenbach-Klinke, 1950:**

Cysts of this parasite were detected in the present study from skin and gills of *B. grypus* with an incidence of 16.7%. The cysts were elongated, whitish in color and containing many rounded spores. This parasite was reported for the first time in Iraq from the gills and skin of common carp (*C. carpio*) fingerlings in Al-Zaafaraniya fish farm, south of Baghdad with an incidence of 5.5% (19, 20). No further account on the occurrence of this parasite is available in Iraq (4). So, *B. grypus* of the present investigation represents the second host for *D. percae* in Iraq and its first record in fishes of Salah Al-Deen province. *D. percae* is the only species of *Dermocystidium* so far recorded in Iraq (4).

***Trichodina cottidarum* forma *cyclopteri* Polyanskii, 1955:**

This ciliate was recorded in the present study from skin of *C. carpio* with an incidence of 4.2%. The first report on this parasite from Iraq was from the gills of *C. carpio* from a man-made lake in Al-Zawraa park, Baghdad by Abdul-Ameer (21) with an incidence of 61.8%. Later, it was reported only from two other hosts: *Hypophthalmichthys molitrix* from a fish farm in Babylon province (22) and from *L. abu* from Hilla river (23). The present study represents the first record of this species in fishes of Salah Al-Deen province.

***Trichodina elegini* Shul'man-Albova, 1950 (Fig. 1 A):**

This ciliated protozoan was detected in the present study from the skin of *L. abu* with an incidence of 2.9%. This is the first record of *T. elegini* from fishes of Iraq as no previous account is available (4). Therefore, a brief account on its description and measurements are given here, based on five specimens.

Urceolariidae: Diameter of body 40-82 μm , attaching disk 27-73 μm , corona 23-45 μm . External processes (4.3-7 μm) in form of slightly curved lobes with rounded tips. Internal processes (3-7 μm) thin, rod like and slightly curved. Internal processes attach some distance from edge of internal side of central part of tooth. 4-5 pairs of attaching disc striations are lying between each two adjacent external processes. Number of teeth in corona is 22-35. The description and measurements of *T. elegini* of the present study are agreeable with those reported by Bykhovskaya-Pavlovskaya *et al.* (13) and Shul'man (14).

***Trichodina murmanica* Polyanski, 1955 (Fig. 1 B):**

This ciliated protozoan was detected in the present study from the skin of *L. abu* with an incidence of 5.9%. This is the first record of *T. murmanica* from fishes of Iraq as no previous account is available from Iraq (4). Therefore, a brief description and measurements which are given here are based on five specimens.

Urceolariidae: Diameter of body 37-86 μm , attaching disk 27-60 μm , corona 22-50 μm . External processes (4-7 μm) in form of broad lobes with rounded tips, slightly curved. Internal processes (3-7 μm) spinelike, broader basally and usually straight. Internal processes attach some distance from edge of internal side of central part of tooth. 4-5 pairs of attaching disc striations are lying between each two adjacent external processes. Number of teeth in corona is 25-33. The description and measurements of *T. murmanica* of the present study are agreeable with those reported by Bykhovskaya-Pavlovskaya *et al.* (13) and Shul'man (14).

It is easy to distinguish the three trichodinids of the present study from each others according to the external and internal processes of their teeth. The external processes are falcate in *T. cottidarum* and slightly curved in both *T. elegini* and *T. murmanica*. The last two species differ according to their internal processes which are rodlike in *T. elegini* and spinelike in *T. murmanica*.

According to Mhaisen (4), a total of 12 species of *Trichodina* were, so far, recorded from fishes of Iraq. These are: *T. acuta*, *T. borealis*, *T. cottidarum*, *T. domerguei*, *T. gracilis*, *T. heterodentata*, *T. mutabilis*, *T. nigra*, *T. nobilis*, *T. pediculus*, *T. prowazeki* and *T. reticulata*. The results of the present investigation bring the total number of *Trichodina* species in Iraq to 14 species.

***Dactylogyrus rhodeianus* Jalali, Papp et Molnár, 1955:**

This parasite was recorded in the present study from gills of *B. luteus* with an incidence of 10%. This parasite was reported for the first time in Iraq from gills of both *B. luteus* and *B. sharpeyi* from Al-Husainia creek, Karbala province (24, 25) with an incidence of 0.3% and 0.4%, respectively. No more reports are available on the occurrence of *D. rhodeianus* in Iraq (4). So, the present account represents a second report of *D. rhodeianus* in *B. luteus* and represents the first occurrence of *D. rhodeianus* from fishes of Salah Al-Deen province.

***Dactylogyrus vastator* Nybelin, 1924:**

This parasite was recorded in the present study from the gills of *C. carpio* with an incidence of 20.8%. This parasite was reported for the first time in Iraq by Ali *et al.* (26) from gills and skin of *C. macrostomum* from Tigris river at Baghdad with an incidence of 2.1%. According to Mhaisen (4), the host list of this parasite in Iraq now includes 29 species inclusive of *C. carpio*. The present investigation represents the second occurrence of *D.*

vastator in Salah Al-Deen province as it was firstly reported from this province by Al-Jawda *et al.* (6) from both *B. barbulus* and *B. xanthopterus*. According to Mhaisen (4), a total of 59 *Dactylogyrus* species were, so far, recorded from fishes of Iraq.

***Paradiplozoon cyprini* Khotenovsky, 1982:**

This parasite was recorded in the present study from the gills of *B. grypus* with an incidence of 25%. Its first report from fishes of Iraq was by Al-Nasiri and Mhaisen (8) from gills of *B. grypus* from Salah Al-Deen province with an incidence of 25%. No more data are available on the occurrence of this parasite in Iraq (4), and hence the present study represents its second occurrence from Salah Al-Deen province. According to Mhaisen (4), the genus *Paradiplozoon* is now represented with seven species which include the present species (*P. cyprini*) and *P. bliccae* of Al-Nasiri (7) from Salah Al-Deen province.

***Microcotyle donavini* van Beneden *et* Hesse, 1863:**

This parasite was recorded in the present study from the gills of *Liza abu* with an incidence of 2.9%. Its first report from Iraq was by Ali *et al.* (27) from gills of *L. abu* at a fish farm in Babylon province with an incidence of 0.3%. According to Mhaisen (4), the present list of *M. donavini* in fishes of Iraq includes 10 species. The present study represents the first occurrence of *M. donavini* in fishes of Salah Al-Deen province. *M. donavini* is the only species of the genus *Microcotyle* so far recorded from fishes of Iraq (4).

To sum up on the findings of the present study, it is clear that extra seven species of parasites are now added to the parasitic fauna of fishes of Salah Al-Deen province. Intensive surveys are expected to reveal more parasites. In connection with the host-parasite list, it is clear that *B. grypus* and *L. abu* of the present study were infected with the highest number of parasite species (three parasite species each), followed by *C. carpio* (two parasite species) and *B. luteus* (one parasite species). Both *B. xanthopterus* and *C. macrostomum* were negative for any parasitic infections.

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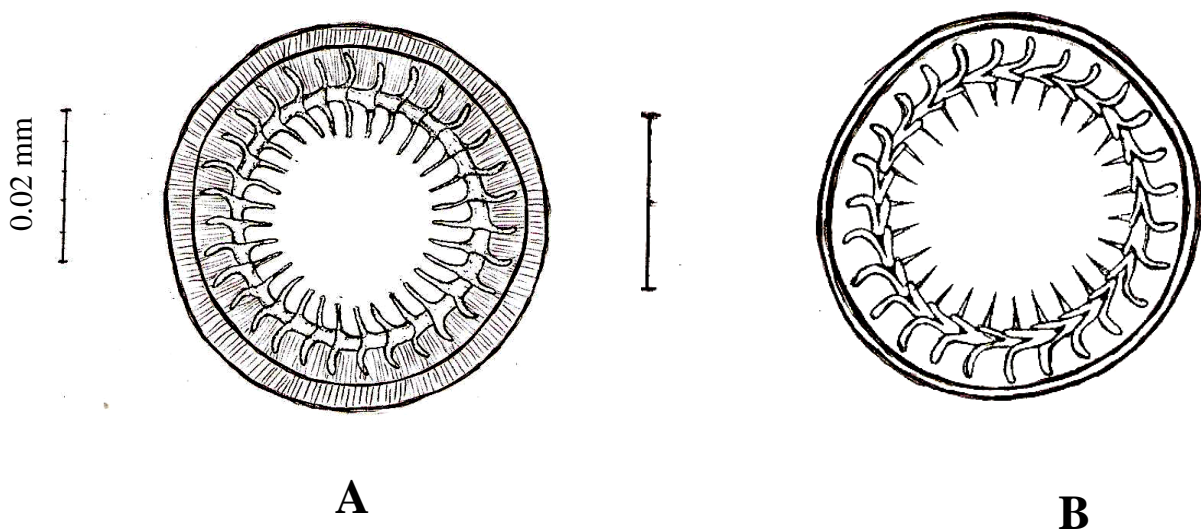


Fig. (1): Two newly recorded *Trichodina* spp. from fishes of Iraq.

A: *T. elegini*, B: *T. murmanica*.

طفيليات أسماك مجموعة من نهر دجلة، محافظة صلاح الدين، العراق

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الخلاصة

جمعت ١٠٩ عينات من الأسماك العائدة لستة أنواع (الشبوط، الحمري، الكطان، البيني كبير الفم، الكارب الإعتيادي والخشني) من نهر دجلة المار عبر محافظة صلاح الدين في أثناء المدة من شهر أيلول ٢٠٠٨ والى غاية شهر كانون الثاني ٢٠٠٩. كانت هذه الأسماك مصابة بتسعة أنواع من الطفيليات العائدة لنوعين من البوغيات الحيوانية (*Dermocystidium* و *Myxobolus mülleri*)، ثلاثة أنواع من الهدبيات (*T. murmanica* و *T. elegini*، *Trichodina cottidarum*) وأربعة أنواع من المخزّات أحادية المنشأ (*D. vastator*، *Dactylogyrus rhodeianus*)، *Paradiplozoon cyprini* و *Microcotyle donavini*). من بين هذه الطفيليات، سجل نوعان من هدبيات الجنس *Trichodina* (*T. murmanica* و *T. elegini*) لأول مرة في العراق. كما تم عدّ الشبوط مضيفاً جديداً في العراق لكل من البوغي *D. percae*، البوغي *M. mülleri*. بإستثناء المخزّم *D. vastator* والمخزّم *P. cyprini* فإن جميع الطفيليات السبعة الباقية تسجل لأول مرة من الأسماك في محافظة صلاح الدين. كانت كل من أسماك الشبوط والخشني (من بين الأسماك المفحوصة) مصابة بأكبر عدد من الأنواع الطفيلية (ثلاثة أنواع لكل منهما)، تلتها أسماك الكارب الإعتيادي (مصابة بنوعين من الطفيليات)، ثم أسماك الحمري (مصابة بنوع واحد).