

**First record of Two species of the genus *Thaparocleidus* in Iraq from gills of fishes *Silurus triostegus* from Diyala River Fishes, Diyala Province, Iraq**

**التسجيل الاول لنوعين من الجنس *Thaparocleidus* في العراق من غلاصم أسماك *Silurus triostegus* من نهر ديالى، محافظة ديالى، العراق**

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**Abstract**

A total of 19 specimens of fishes *Silurus triostegus* were collected from Diyala River during the period from July 2016 till February 2017, These fish were found infected with three species of parasites, These parasites were *Thaparocleidus macracanthus*, *T. magnicirrus* and *T. mediacanthus*. In addition *T. macracanthus* and *T. magnicirrus* were considered as a new record in Iraq, as well as the record of *S. triostegus* as a new host in Iraq for species of *T. mediacanthus* in the present study. The description, measurements and illustrations of these parasites were given.

**Key words:** Monogenea, *Thaparocleidus macracanthus*, *Thaparocleidus magnicirrus*, Diyala River, Iraq

**الخلاصة**

جمعت 19 عينة من أسماك *Silurus triostegus* كان الجمع من نهر ديالى خلال الفترة من شهر تموز 2016 الى شهر شباط 2017، اذ وجد ان هذه الأسماك مصابة بثلاثة أنواع من الطفيليات هذه الطفيليات هي: *Thaparocleidus macracanthus* و *T. magnicirrus* و *T. mediacanthus* بعد تسجيل النوعين *T. macracanthus* و *T. magnicirrus* لأول مرة في العراق فضلا عن تسجيل سمكة *S. triostegus* مضيف جديد في العراق للطفيلي *T. mediacanthus* في هذه الدراسة. تم إعطاء مواصفات هذه الطفيليات بالإضافة إلى الرسم التوضيحي لها.

**الكلمات المفتاحية:** العراق، نهر ديالى، *Thaparocleidus macracanthus*، *Thaparocleidus magnicirrus*

**Introduction**

Monogeneans are a group of parasitic flatworms that are usually found on fishes and inferior aquatic invertebrates[1].The speciation of free-living organisms is supposed to be caused by two main mechanisms. allopatric speciation,which results from generative isolation due to extrinsic factors such as geographical barriers [2].

Monogeneans can be divided into two major groups, the monopisthocotyleans which have hook-like organs on their haptors to attach to their host, and the polyopisthocotyleans which use clamp-like structure for attachment [1]

*Thaparocleidus* spp. fits to the family Dactylogyridae, order Dactylogyridea, class Monogenea, phylum Platyhelminthes. These monogenean parasites which whole their life cycles on one host are common gill parasites infected freshwater fishes [3].

They have small seven pairs of embryonic type of marginal hooks and two pairs of median hooks, Dorsal median hooks are long, generally missing external process, typically with well developed accessory bits. Dorsal median hooks with unpaired dorsal joining bar and ventral median hooks with paired connecting bar. Two pairs of eye acnes present. Copulatory organ chitinoid, containing of tube and support device *Thaparocleidus* included 26 species from the previous Soviet Union freshwater fishes [4] .

In Iraq, was recorded for the first time in Iraq from Tigris river in Salah Al-Dien province [5].

## **Materials and Methods**

A total of 19 fishes *Silurus triostegus* belonging to one species were composed from Diyala river, at Khan Bani Saad. Sampling was done twice tabloid during the period from July 2016 to February 2017. The fishes were placed in a cool box containing native river water, transferred right away to the laboratory and were inspected within 24 hours after their capture. The fishes were identified according to [6]. In the laboratory, the gill arches were remote from both sides kept moist in Petri dish and examined under dissecting microscope for the presence of *Thaparocleidus* spp . on each gill lamella. Parasites were isolated and then stained with aqueous neutral red and permanent slides were prepared with glycerol-gelatin [7].

Drawings of the sclerotized pieces of the haptor were made by using a camera Lucida. The measurements of parasites were achieved by ocular micrometer. The morphological terminology and the parasites identification were done on basis of [8]. The information on the previous account records of parasites were checked by using the index-catalog of parasites and disease agents of fishes of Iraq [9]. The mean values of all measurements (in mm) employed in this study are used in the description as in the following order minimum- maximum (mean) values.

## **Results and Discussion**

The present investigation showed the existence of two species of monogeneans belonging to the genus *Thaparocleidus*. The following is an description of their measurements (in mm) which were based on five specimens of each species.

**Table (1): The distribution of parasite *Thaparocleidus* with their hosts and prevalence of infection:**

Parasite Species*	Host	Mean intensity	prevalence of infection (%)
<i>Thaparocleidus macracanthus</i> **	<i>Silurus triostegus</i>	1.4	26.3
<i>T. magnicirrus</i> **	<i>S. triostegus</i>	2	10.5
<i>T. mediacanthus</i>	<i>S. triostegus</i> ***	1.3	15.8

\* Site of infection are gills

\*\* New parasite record in Iraq

\*\*\* New host record in Iraq

***Thaparocleidus macracanthus* Akhmerov, 1952 (Fig. 1)**

This species was reported on gills of *Silurus triostegus* of the present study with a prevalence 26.3% and the mean intensity 1.4 (Table, 1) This parasite was not reported before from any fish species in Iraq [9]. therefore, the present parasite is considered as the first record in Iraq.

Large worm, length 0.98-1.2(1.0), width 0.18-0.22(0.20), length of marginal hooks 0.014- 0.018 (0.016), total length of ventral median hooks 0.032-0.034(0.033), dorsal median hooks 0.024-0.028(0.026), accessory pieces 0.017-0.021(0.019) × 0.082-0.092(0.087), ventral connecting bar 0.007-0.009(0.008) × 0.038-0.044(0.041), dorsal connecting bar 0.021-0.025(0.023) × 0.051-0.061(0.056). Length of copulatory organ 0. 18-0.22(0.20).

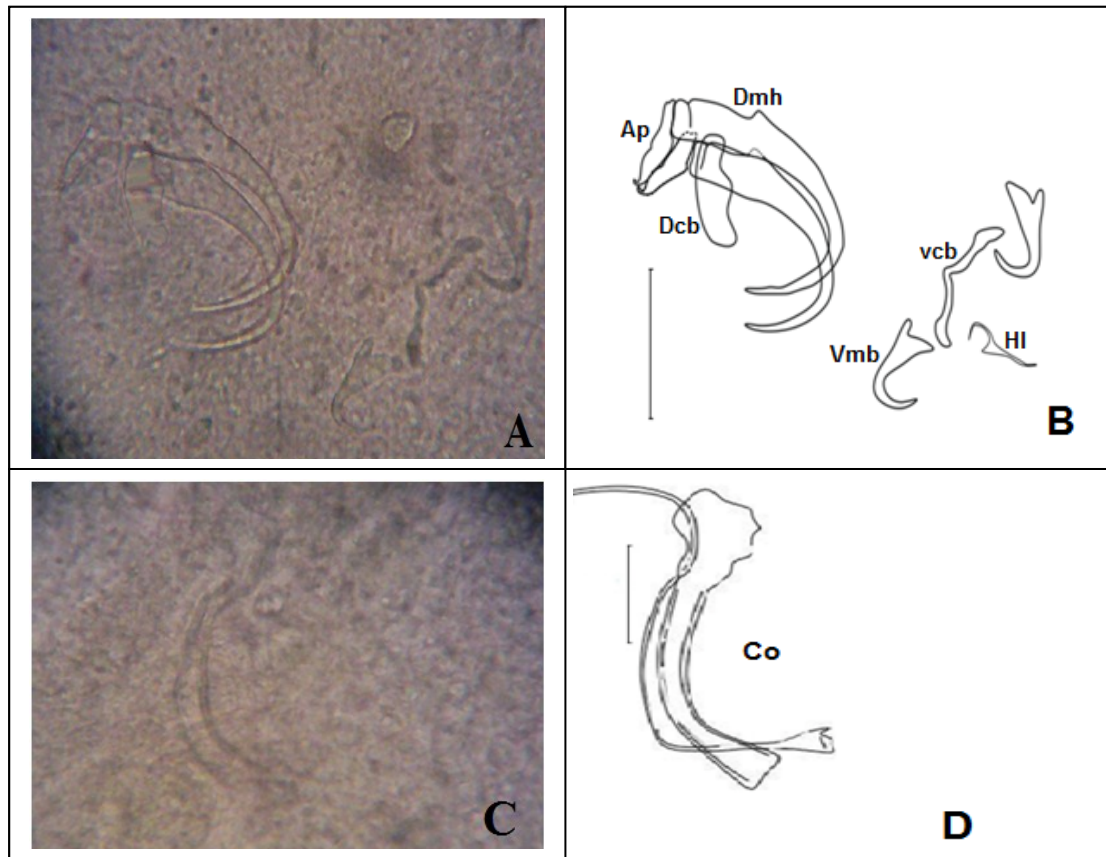
***Thaparocleidus magnicirrus* (Gussev & Strelkov, 1960) (Fig.2)**

The specimen of *T. magnicirrus* were collected from gills of *Silurus triostegus* with a prevalence 10.5% and the mean intensity 2 (Table, 1) This parasite was not reported before from any fish species in Iraq [9]. Therefore, the present parasite is considered as the first record in Iraq.

Large worm, length 0.99-1.3(1.1), width 0.26-0.30(0.28), length of marginal hooks 0.014- 0.016 (0.015), total length of ventral median hooks 0.023-0.027(0.025), dorsal median hooks 0.095-0.121(0.108), accessory pieces 0.010-0.012(0.011) × 0.032-0.038(0.035), ventral connecting bar 0.003-0.005(0.004) × 0.021-0.027(0.024), dorsal connecting bar 0.007-0.011(0.009) × 0.034-0.040(0.037). Length of copulatory organ 0. 11-0.13(0.12).

***Thaparocleidus mediacanthus* (Achmerov, 1952) Lim, 1996**

This parasite was recorded from gills of *S. triostegus* of the present study, with prevalence of infection 15.8 % and the mean intensity was 1.3(Tabel, 1). This parasite was detected for the first time in Iraq was from gill of *Carasobarbus luteus* from Diyala River fishes in Diyala Province [10]. Later did not report in any other hosts [9], and hence *S. triostegus* of this study is considered as a new host record for this parasite in Iraq.



**Fig. 1** *Thaparocleidus macracanthus*

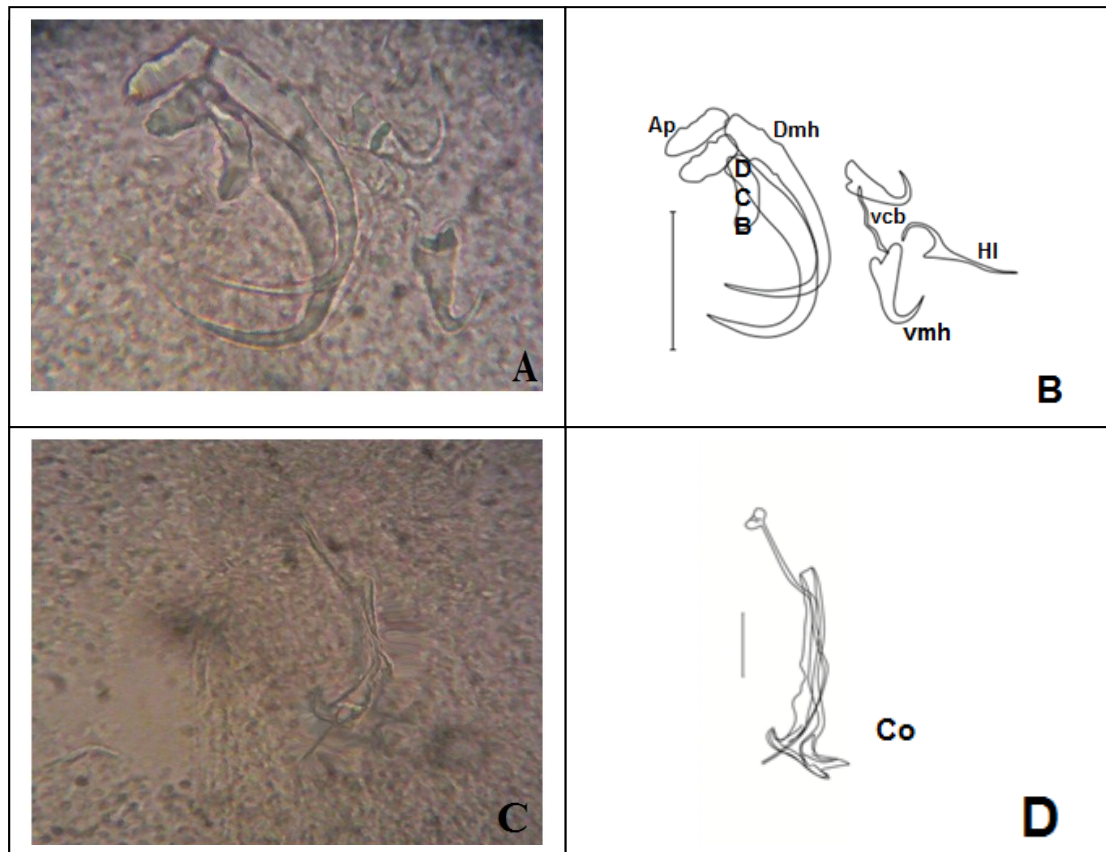
A- Photomicrograph of haptor parts (400x).

B- A camera Lucida drawing of haptor parts (Scale = 0.2 mm.).

Ap: accessory piece; Dcb: dorsal connecting bar; Dmh: dorsal median hook; HI: hooklet; Vcb: ventral connecting bar; Vmh: ventral median hook.

C- Photomicrograph of copulatory organ (400x).

D- A camera Lucida drawing of copulatory organ (Scale = 0.02 mm.).



**Fig. 2 . *Thaparocleidus magnicirrus***

A- Photomicrograph of haptor parts (400x).

B- A camera Lucida drawing of haptor parts (Scale = 0.08 mm.).

Ap: accessory piece; Dcb: dorsal connecting bar; Dmh: dorsal median hook; HI: hooklet; Vcb: ventral connecting bar; Vmh: ventral median hook.

C- Photomicrograph of copulatory organ (400x).

D- A camera Lucida drawing of copulatory organ (Scale = 0.04 mm.).

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