New Host Record, *Chalcalburnus mossulensis* (Heckel, 1843) (Teleostei; Cyprinidae) for *Ergasilus mosulensis* Rahemo, 1982 (Copepoda; Ergasilidae)

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Abstract

We report the presence of the parasitic copepod *Ergasilus mosulensis* Rahemo, 1982 (Copepoda, Ergasilidae) on the Caspian sheaya, *Chalcalburnus mossulensis* (Heckel, 1843) (Teleostei, Cyprinidae), caught from Atatürk Dam Lake (36^0 41' N 37^0 49' E, Sanliurfa, Turkey) between July and August 2006. A total of 23 *Ergasilus mosulensis* Rahemo, 1982 (Ergasilidae) were recorded from the gills of this fish species for the first time. Percentage of prevalence and mean intensity of infection was 10.8 and 1.8, respectively. The morphological characteristics of *Ergasilus mosulensis* were studied by means of scanning electron microscopy.

Introduction

The Caspian shemaya, *Chalcalburnus mossulensis* (Heckel, 1843) is distributed in warm water. It is one of the most important fish which have economic value in Atatürk Dam Lake (Duman & Çelik, 2001). There are more than 150 species of parasitic copepods in the genus *Ergasilus*, with most examples being reported from freshwater systems, and in particular, at least 23 species have been reported from estuarine or coastal marine habitats. Nearly all adult female ergasilids are parasites of teleost fishes, typically attaching to the gill flaments with their large subchelate antennae. Some species utilise other microhabitats on the fish host, such as the fins or inside the nasal fossae (Boxshall & Montu, 1997). However, studies on ergasilids are still insufficient (Öktener, 2003; Öktener et al., 2007; Oguz & Öktener, 2007; Koyun et al., 2007). Thus, the aim of this present study is to determine the parasitic copepod fauna of *C. mossulensis* inhabiting fresh water in Turkey.

Materials and methods

In total, 120 *Chalcalburnus mossulensis* (Heckel, 1843) (Teleostei, Cyprinidae) caught from Atatürk Dam Lake (36° 41' N 37° 49' E, Sanliurfa, Southeast Anatolian Region, Turkey) were examined for ectoparasites between July and August 2006. The parasites were removed from the fish bodies immediately after the fish were killed. The identification of *Ergasilus* was made by consulting the works of Rahemo (1982) and

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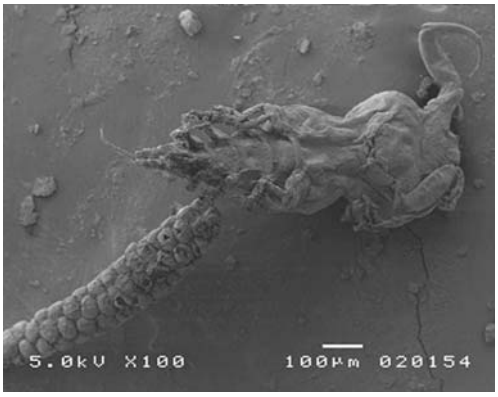

Figure 1. SEM *Ergasilus mosulensis* entired body (scale bar100 micrometre).

Figure 2. SEM Abdomen and 2nd and 3rd legs (Scale bar 50 micrometre).

Ho et al. (1996). *Chalcalburnus mossulensis* was identified using Beckman (1962) and Froese & Pauly (2006). Parasites were preserved and fixed in 70% ethanol. Parasitic copepods were cleared and dissected in lactic acid (Öktener & Trilles, 2004). Some of them were prepared for scanning electron microscopy (SEM). For this purpose, the specimens were fixed in 3% glutaraldehyde in 0.1 M phosphate buffer (Ph 7.2) at 4°C for 1 h. Later, they were washed in the buffer before post-fixation in 1% osmium tetroxide in the same buffer at 4°C for 1 h. And then specimens were dehydrated with alcohol series and dried until critical point. Subsequently, they were sputter-coated with gold (Topçu, 1977). The parasite samples were deposited in the personal collection of A. Öktener (Provincial Directorate of Agriculture).

Results

Ergasilus mosulensis Rahemo, 1982 (Copepoda: Ergasilidae) was collected from the gills of thirteen out of 120 *Chalcalburnus mossulensis* examined in Atatürk Dam Lake. Prevalence and mean intensity of infection were 10.8 and 1.8 respectively.

Mean total length of parasites was 849 (704-994) µm. The well-known characteristic of the present species is the appearance of the cephalothorax which is guitar-shaped with anterior lobe (Figure 1). First antenna is six segmented. Abdomen is three segmented and second antenna is located on prominent cephalic protrusion. Legs I-IV are biramous with spines and setae (Figure 2). In addition, there was a single seta on endo second segment of the 2nd and 3rd legs.

Discussion

Ergasilids in Turkey were reported to be found in freshwater, brackish and marine fishes; *Ergasilus sieboldi* (Nordmann, 1832), *Ergasilus briani* Markewitsch, 1933, *Ergasilus gibbus*, *Ergasilus nanus* Nordmann, 1832, *Nipergasilus bora* Yamaguti, 1939, *Paraergasilus longidigitus* Yin, 1954 (Öktener, 2003; Öktener et al., 2007; Oguz & Öktener, 2007; Koyun et al., 2007). Öktener et al. (2007) reported *Ergasilus mosulensis* Rahemo, 1982 on *Liza abu* from Atatürk Dam Lake Turkey. It is the new host record, *Chalcalburnus mossulensis* for *Ergasilus mosulensis* from Turkey. It was described for the first time by Rahemo (1982)

Hosts for *Ergasilus mosulensis*	Country	References
Aspius vorax	Iraq	Al-Daraji, 1986
Barbus sharpeyi	Iraq	Al-Daraji, 1986
B. luteus	Iraq	Mhaisen, 1986; Mhaisen et al., 1988; Balasem et al., 2002; Balasem et al., 2003
Ctenopharyngodon idella	Iraq	Al-Zubaidy, 1998; Asmar et al., 2004
Cyprinus carpio	Iraq	Abdulah, 1990; Al-Zubaidy, 1998
Hypophthalmichthys molitrix	Iraq	Al-Zubaidy, 1998
Liza abu	Iraq and Turkey	Rahemo, 1982; Mhaisen, 1986; Mhaisen et al., 1986; Mohammad-Ali et al., 1999; Balasem et al., 2001; Balasem et al., 2002; Öktener et al., 2007
Silurus triostegus	Iraq	Al-Daraji, 1986
Silurus glanis	Iraq	Al-Niaeemi, 1997
Chalcalburnus mossulensis	Turkey	This study

Table 1. Hosts for *Ergasilus mosulensis* from different parts of Turkish and Iraqi water systems.

from *Liza abu* in Tigris-Dicle River northern Iraq (Fresh water). After this research, Ho et al. (1996) identified five ergasilids and redescribed them in the same host from Shatt Al-Arab of southern Iraq (brackish water). There was no host record *Chalcalburnus mossulensis* for *Ergasilus mosulensis* from Iraq and Turkish inland water systems before (Table 1).

We could conclude that *E. mosulensis* have wide range of hosts (Cyprinidae, Siluridae and Mugilidae families), also wide range of salinities (Euphrates-Firat, Tigris-Dicle, Shatt Al-Arab Rivers and their tributaries). Euphrates-Firat River is linked up Iraqi river system. For this reason, our findings are matched with the result of other researchers in Iraq. Although *C. mossulensis* live in Iraqi and Turkish water, no host for this copepod has been reported beforehand. Also it has been not recorded from Iranian water bodies (Coad, 2007). On the other hand, Iraqi rivers system is connected with Euphrates-Firat river system in Turkey. Therefore, this fish is considered as new host record for this parasite, *Ergasilus mosulensis*.

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