

A NEW HOST RECORD AND A NEW LOCALITY OF *PSEUDOCHELOSOMA SALMONICOLA* DOLLFUS, 1951

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ABSTRACT

A gall bladder fluke, *Pseudochetosoma salmonicola* has been recovered from a freshwater fish, *Acanthobrama marmid* caught from River Tigris passing through Mosul city for the first time. A comparison was done between the present species collected from Morocco, Bulgaria in addition to closely allied species *Pseudochetosoma leucisci* from Albania. This record of this worm is the first in Asian countries and Iraq.

KEY WORDS: Parasitic worm, gall bladder, fishes

INTRODUCTION

Pseudochetosoma salmonicola Dollfus, 1951 has been recovered from many salmonid and cyprinid fishes. Originally described from *Salmo trutta macrostigma* (Salmonidae) and *Labeobarbus paytoni* and *Barbus callensis* (Cyprinidae) from North Africa (Moravec, 2004).

In Europe it has been reported from *Oncorhynchus mykiss*, *Salmo trutta fario*, *Salvelinus alpinus* and *Thymallus thymallus* (all Salmonidae), while from cyprinid, *Alburnoides bipunctatus*, *Barbus petenyi*, *Chondrostoma nasus*, *Gobio gobio*, *Leuciscus cephalus*, *L. cephalus albus* and *Phoxinus phoxinus*. From other families: *Cobiti taenia* (Cobitidae), *Brbatula barbatula* (Balitoridae) and *Cottus gobio* (Cottidae). As it appears from above that *P. salmonicola* was not recovered from Asian countries, so the present report is the first in Asia.

MATERIALS AND METHODS

156 specimens of *Acanthobrama marmid* were collected from river Tigris River passing during M.Sc, project through Mosul city, brought to the laboratory of Biology department, dissected to obtain the worm, *Pseudochetosoma salmonicola* from the gall bladder. Specimens were fixed in 10% formaline-saline, washed in water then stained in acetocarmine, dehydrated in ascending grades of ethyl alcohol, then mounted in Canada balsam.

RESULTS AND DISCUSSION

It is a small parasite, white to yellowish in color, usually 2-3 worms recovered from a single host, sometime as many as 7 have been found. It was found attached to the epithelial lining of the gall bladder.

The body is small, fusiform covered with unspined cuticle, (measurements were based on 20 specimens and expressed in mm), it measured 0.85-2.69(1.69) in length and 0.51-1.10(0.85) in width, the oral sucker is ventro-terminal 0.200-0.300 (0.243) in length and 0.200-0.292(0.243) in width. The ventral sucker measures 0.272-0.400(0.327) in long and 0.28-0.400(0.33) in wide. The distance between the oral and the ventral suckers from center to center is 0.62-1.05(0.78). The mouth leads into a fairly developed pharynx which is highly muscular and measures 0.8- 1(0.9) long and 0.09-0.15(0.12) wide. The oesophagus is of a moderate length, slightly longer but narrower than pharynx. It measures 0.08-0.28(0.18) by 0.05-0.14(0.08). The oesophagus bifurcates, slightly anterior to the acetabulum, into two intestinal caecae terminating in the equatorial zone of the body.

The testes are oval or slightly irregular in outline, located in the posterior part of the body, nearly at the same level. They are slightly differ in size, the one to the right, measures 0.16-0.3(0.23) in length and 0.11-0.19(0.18) in width, while the other is 0.16-0.28(0.21) long and 0.09-0.17(0.15) broad.

The ovary is single, slightly lobulated, pre-testicular and located near the terminal end of the right caecum. It measures 0.1-0.2(0.15) long and 0.05-0.12(0.08) wide.

The cirrus pouch is pyriform, 0.24-0.32(0.25) long and 0.08-0.12(0.09) broad. It extends obliquely forward in front of acetabulum, enclosing a winding seminal vesicle. The receptaculum seminis and Laurer's canal are present. The vitelline glands are follicular,.

The eggs are moderately large, 0.075-0.08 long and 0.035 wide. The uterus consists of many branches occupying most of the hind body. The excretory vesicle is short, tubular; its collecting arms pass between the two testes, and reach the level of the oesophagus.

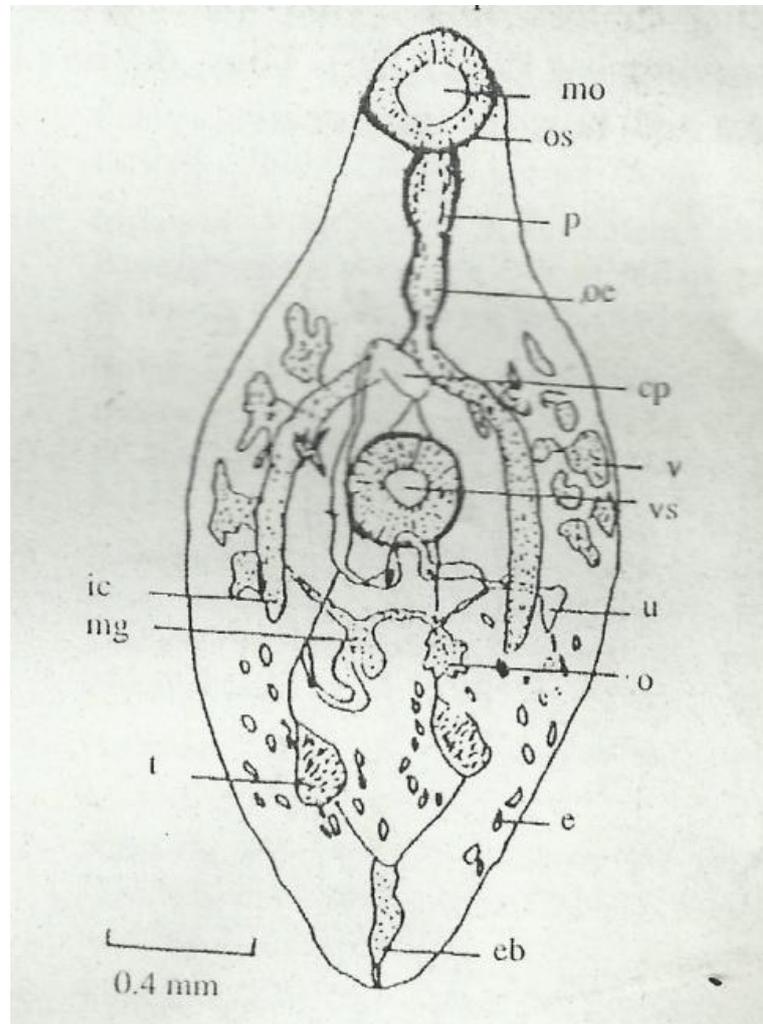


Figure 1. A camera lucida drawing of *Pseudochetosoma salmonicola*; mo: mouth opening, os: oral sucker, p: pharynx, oe: esophagus, cp: cirrus pouch, ic: intestinal caecum, mg: Mehlis gland, eb: excretory bladder, t: testis, e: egg, o: ovary, u: uterus, v: vitellaria, vs: ventral sucker.

Till now there are only two species of this genus known, one is *Pseudochetosoma salmonicola* (Dollfus, 1951) found in the intestine of *Salmo macrostigma* Dumeril, from region of Azrou, Morocco. It is also reported from the gall-bladder of *Barbus callenesis* and *Labeobarbus paytoni*. Later, Ergens (1963) discovered another species, *P. leucisci*, in the gall bladder of *Leuciscus cephalus* from River Kiri in Albania. There are certain morphological differences between this species and *P. salmonicola*.

The specimens recovered in this study, from the gall-bladder of *Acanthobrama marmid* Heckel, differs in measurements from the species recorded at Morocco and Bulgaria which differ significantly from each other. Kakatcheva-Avramova (1966) compared in a table the species found in Morocco, Bulgaria and *P. leucisci* in Albania. This table can be modified to embrace *P. salmonicola* found in the gall-bladder of *A. marmid* from River Tigris, Mosul, Iraq (Table 1).

It is concluded that *P. salmonicola* recovered from this region differs in size from that recovered in Morocco, but closely resembles to that of Bulgaria. In other measurements also these specimens have no similarity with those of Morocco, but resembles to *P. leucisci* in the size of pre-acetabulum, acetabulum and that of the eggs. If compared in all

its morphological details including measurements, these specimens are in agreement with *P. salmonicola* reported from Bulgaria and cited by Kakatcheva-vramova(1966).

Noteworthy the present species, *P. salmonicola* is not host specific as it has been recovered from many fishes in Iraq: recovered later on from *Cyprinion macrostomus* in River Tigris passing in Baghdad(Ali et al.1987) , from *Alburnus capito*(*A. mossulensis*) by Rahemo and Ami 1991,1993), from *Garra rufa* by Rahemo 1995 and Al-Mausawi 1997, from *Barbus luteus* (*Carasobarbus luteus*) by Rahemo and Al-Kalak 1998, from *Barbus barbulus* by Al-Jawda et al. 2000 and Abdullah 2002, *Leuciscus cephalus* (*Squalius cephalus*) by Abdullah 2004, from *Mastacembelus simach*(*Mastacembelus mastacembelus* by Rahemo 1996; and Bashe 2008 and Bashe and Abdullah 2010, from *Aspiux vorax*(*Leuascus vorax*) by Al-Moussawi 1997 and Al-Jawda et al. 2000, from *Barbus grypus*(*Arabibarbus grypus*) by al-Moussawi 1997 and Al-Jawda et al.2000, from *Chondrostoma regium* by Al-Moussawi 1997 and Adday et al.1999

It can be concluded that this species is not host specific as it has been recovered from different hosts, both freshwater and marine fishes .Furthermore, when we think zoogeographically about distribution of this species, *P. salmonicola*, the specimens collected from Bulgaria, Albania, and Morocco are more close geographically especially by seawater, as they are more or less connected to the Mediterranean sea but it is curious how this species reached Iraqi fishes especially *A. marmid*, a freshwater fish in Tigris river passing through Mosul city(North of Iraq) and other fishes caught from both Greater Zap and lesser Zap rivers or in River Tigris passing through Baghdad (middle of Iraq) . Such route of this parasite worth to be investigated with relation to the fish host. How the parasite adapted to live in freshwater fishes then transfer to marine fishes or the opposite, furthermore intermediate hosts are defiantly present but how these intermediate hosts are available in both different environments, and capable of transporting the infection to the final host, freshwater and marine fishes. this is also to suppose that these intermediate hosts are not host specific, such it is expected that this trematode is present in both Atlantic and Indian oceans to be close to both Arabian gulf and Mediterranean sea. It seem necessary to investigate fishes of both Atlantic and Indian Ocean to have more information about the zoogeographical map about the occurrence of this trematode.

Table 1. Showing a comparison in measurements between *P.salminicola* from Morocco, Bulgaria and Iraq and *P. leucisci* from Albania.

Measurements	<i>P.salmonicola</i> /Morocco	<i>P.leucisci</i> /Albania	<i>P.samonicola</i> /Bulgaria	<i>P.samonocola</i> /Iraq
Length of body	1.370-200	2.720-2.850	0.6240-2.500	0.8500-2.9580
Width of t body	0.350-0.410	0.840-1.360	0.3210-1.000	0.5100-1.220
Length of pre-acetabulum	0.130-0.160	0.217-0.258	0.1040-0.2104	0.200-0.300
Width of per-acetabulum	0.067	0.231-0.299	0.1144-0.2704	0.200-0.292
Length of pharynx	0.053-0.060	0.102-0.122	0.0624-0.1772	0.0800-0.1200
Width of pharynx	0.110-0.210	0.122-0.136	0.062-0.1456	0.088-0.1480
Length of oesopgagus	0.220-0.280	0.326-0.367	0.1025-0.3120	0.0800-0.2800
Length of acetabulum	0.150-0.184	0.340-0.386	0.1845-0.4160	0.272-0.400
Width of acetabulum	0.057-0.068	0.367-0.421	0.1558-0.3952	0.280-0.400
Length of cirrus pouch	0.057-0.086	0.367-0.421	0.1556-0.395	0.2400-0.3200
Width of cirrus pouch	0.057-0.068	0.081-0.095	0.1558-0.3952	0.0800-0.1200
Egg length	0.075-0.086	0.072-0.081	0.0697-0.0820	0.068-0.0760
Egg width	0.045-0.050	0.033-0.042	0.0246	0.030-0.400

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