

New Records About Helminth Parasites of the Marsh Frog, *Rana ridibunda ridibunda* (Anura : Ranidae) from the North of Iran

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Abstracts: A field trials were conducted to assess the helminth parasites of 12 marsh frogs (*Rana ridibunda ridibunda*) in the Anzali, Astara and Aghbaba regions in the north of Iran in May 1994. Experimental results showed that 83.8% of the Anzali marsh frogs were infected by one or two kinds of metacercarian cysts of digenetic trematodes. The helminth parasites were included *Skrjabinoeces breviansa*, *S. smilis*, *Gorgodera dollfusi*, *Opisthioglyphe ranae*, *Prosotocus confusus*, *Encyclometra colubrimurorum* and *Codonocephalus urniger*. Frogs collected form the Astara region were infected by the helminth parasites such as *Diplodiscus subclavatus*, *P. confusus*, *C. urniger* and *Cosmocerca ornata*. There was only one digenetic trematodes cysts such as *Pleurogenoides medians* in the Aghbaba region. In this paper, except the *S. smilis*, *C. urniger* and *O. ranae* we report 7 new helminth parasites in the north Iranian freshwater systemf for the first time.

Key Words : Parasite, Helminth, Digenea, Nematode. Frog, Iran

Introduction

R. ridibunda ridibunda, is among the most common marsh frog which is found in a wide variety of aquatic habitats of the Iranian freshwater systems, except in some small area of Southeast. The infection of the marsh frog in the

Anzali port city, Astara and Aghbaba regions by helminth parasites were reported by Combes and Knoepffler in 1972. They also had reported 5 different parasites of marsh frog on the *R. ridibunda ridibunda* such as *Acanthocephalus ranae* Schrank, 1788 ; *Opisthioglyphe ranae* Frohlich, 1791 ; *Haematoloechus variegatus* Rudolphi, 1819 ; *H. similis* Looss, 1899 ; *Gorgoderia microovata* Fuhrmann, 1924 and the *Prostotocus fuelleborni* Travassos, 1930. The objective of this research was to examine the better understanding of the helminth parasites of *R. ridibunda ridibunda* in the Iranian frog community. Also, some new records of helminth parasites at all experimental sites introduced.

Materials and Methods

On May 1994, 12, 2 and 4 specimens of the adult marsh frog (*Rana ridibunda ridibunda*) were randomly collected from the 3 experimental sites in the north of Iran. Experimental sites were Anzali port and Astara in the Guilan province and Aghbaba region in the Ghazvin provinces respectively (Fig. 1).

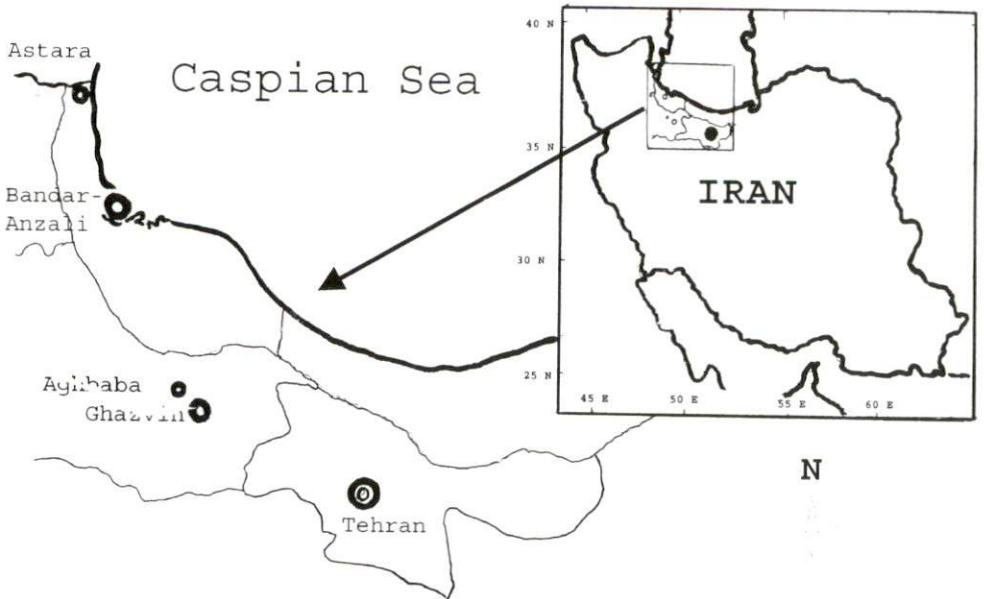


Figure 1: Map of sampling sites

To determine the parasites cysts in the frog bodies, samples were dissected immediately after collection. The frog body were separated to urinary bladder, lungs, stomach, intestine and liver in the different Petri dishes. The Petri dishes were sealed with sodium chloride in the low light microscope at 12x magnification. The helminth parasites were separated and fixed into the 10% formalin. Thereafter, they stained in the carmine alum mounted in the Canade balsam on microscope slides. The parasitic species were examined according to the procedures used by Skrjabin (1964) ; Vojtkova (1974); Vojtkova & Vojtek (1975); Smyth & Smyth (1980) and Prudhoe & Bray (1982). The confirmation of helminth parasites was carried out by the London Natural Museum History.

Results

Experimental results showed those 7 adult digeneans, 2 digenetic trematodes and 1 nematodes were found on *R. ridibunda ridibunda* in all experimental sites. The Anzali lagoon frogs were infected by 5 digenetic trematodes and 2 metacercarian cysts (Table 1).

Table 1: Helminth parasites of *R. ridibunda ridibunda*, their microhabitat, relevance, number of the hosts, mean intensity (Int) and standard deviation (SD) of parasites from Anzali region

Parasite	Microhabitats	Prevalence	No. of Hosts	Mean Intensity (SD)
<i>Skrjabinoeces breviansa</i>	Lungs	8.3	1	(±) 3
<i>Skrjabinoeces similis</i>	Lungs	16.7	2	(±) 1.5
<i>Gorgodera dollfusi</i>	Urinary bladder	8.3	1	(±) 2
<i>Opisthioglyphe ranae</i>	Intestine	41.7	5	(±)9.2 (6.54)
<i>Prosotocus confusus</i>	Intestine	8.3	1	(±) 6
<i>Encyclometra colubrimurorum</i>	Liver	8.3	1	(±)1
<i>Codonocephalus urniger</i>	Body cavity, peritoneum, mesenteries	33.3	4	(±)10.5 (8.22)

Metacercarian cysts were included *E. colubrimurorum* and *C. urniger* ; *S. similis* and *O. ranae* were reported by Combes and Knoepffler in 1972. The *S. similis* and *O. ranae* helminth parasites were reported from Chahar Mahal-o-

Bakhtiari province in the Southwest of Iran by Mashaii (1999). Most specimens of marsh frogs (83.3%) in the Anzali lagoon were infected by one or two species of digenetic trematodes such as *S. breviansa*, *S. similis*, *G. dullfusi*, *O. ranae* and *P. confusus* (Fig. 2). There were no significant differences ($P < 0.05$) between the size of marsh frogs in the range of 3.4 to 4.41 cm which female. The other helminth parasites on marsh frog in the Anzali region was first introduced.

There were 2 adult digenetic trematods species including: *Diplodiscus subclavatus* and *Prostotocus confusus*, one metacercarian cyst: *Cononocephalus urniger* and one nematode species: *Cosmocerca ornata* in the body of experimental marsh frogs collected from the Astara region. Although, in the Aghbaba region, there was only an infected marsh frog with *Pleurogenoides medians* (Table 2).

Table 2: Parasites of *Rana ridibunda ridibunda* from Astara and Aghbaba regions, their microhabitat, number of infested hosts and number of parasites in each host

Sites	Parasites	Microhabitats	Num. of hosts	Num. of parasites
	<i>Diplodiscus subclavatus</i>	Rectum	2	7,17
	<i>Prostotocus confusus</i>	Intestine	1	2
Astara	<i>Cononocephalus urniger</i>	Body cavity, peritoneum, mesenteries	1	11
	<i>Cosmocerca ornata</i>	Rectum	1	3
Aghbaba	<i>Pleurogenoides medians</i>	Urinary bladder	1	2

Except *C. urniger*, all helminth parasites found in Astara and Aghbaba regions were new records reported first in Iran. All the marsh frogs helminth parasites which found in the experimental sites were recorded in Russia, some African countries and east of Europe (Vojtkova, 1974; Vojtkova & Vojtek, 1975; Moravec *et al.*, 1987) (figs. 2 to 10).

There were no significant differences in helminth parasites taxonomy between experiment of sites and neighbouring countries. Compare to Moravec *et al.*, (1987) results who reported 5 pairs of plectans on the tail of *C. ornata*, this study showed eight pairs on it (plate 1).



Figure 2 : *Skrjabinoeces breviansa*
(Scale bar: 1 mm)



Figure 3 : *Skrjabinoeces similis*
(Scale bar: 1 mm)

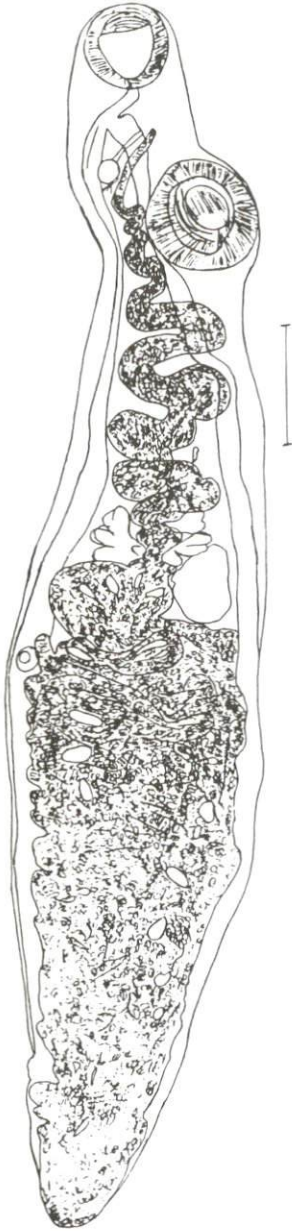


Figure 4 : *Gorgodera dollfusi*
(Scale bar: 1 mm)

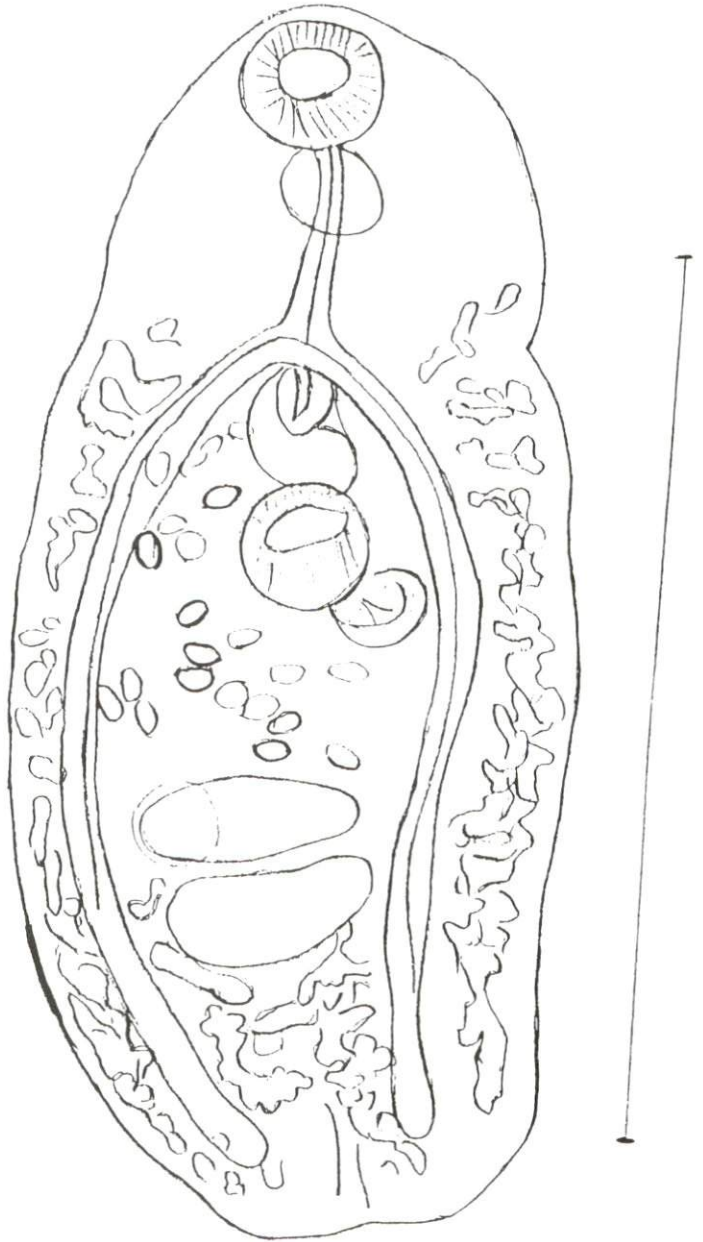


Figure 5 : *Opisthioglyphe ranae*
(Scale bar: 1 mm)



Figure 6 : *Prosotocus confusus*
(Scale bar: 1 mm)



Figure 7 : *Encyclometra colubrimurorum*
(Scale bar: 1 mm)

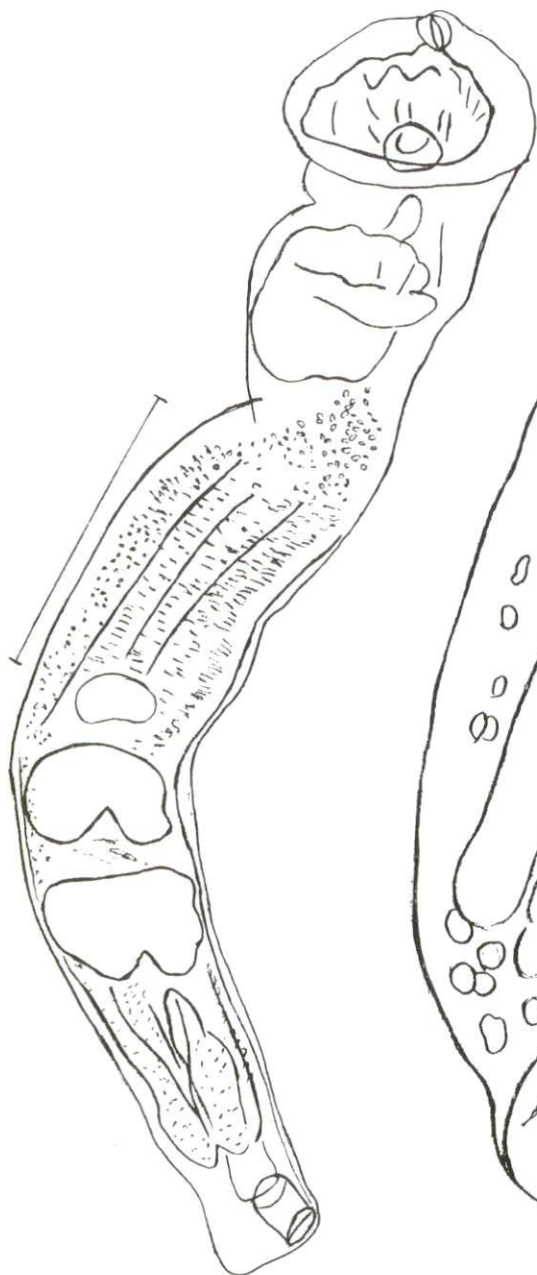


Figure 8 : *Codonocephalus urniger*
(Scale bar: 1 mm)

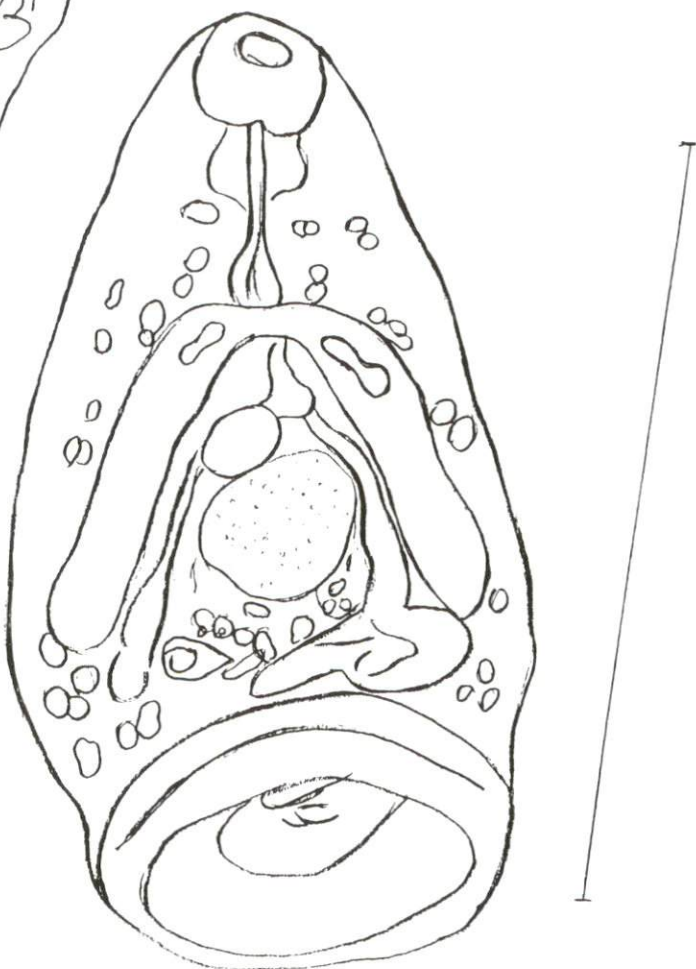


Figure 9 : *Diplodiscus subclavatus*
(Scale bar: 1 mm)

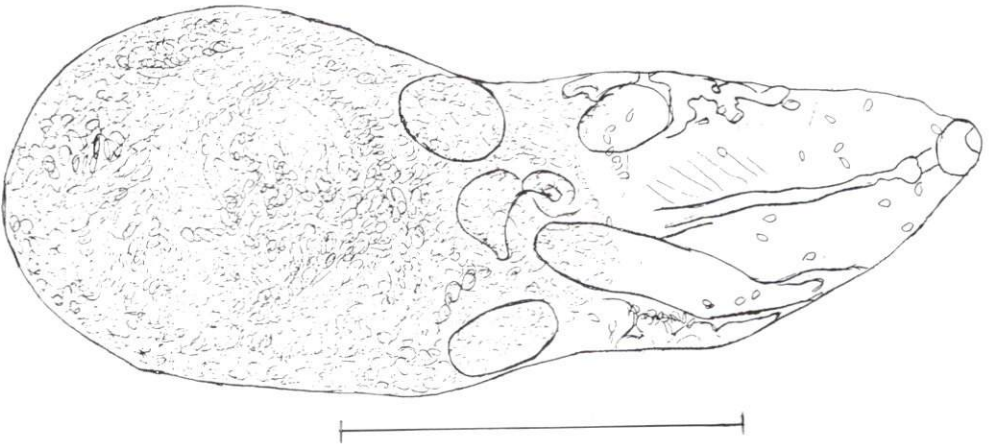


Figure 10 : *Pleurogenoides medians* (Scale bar : 1 mm)

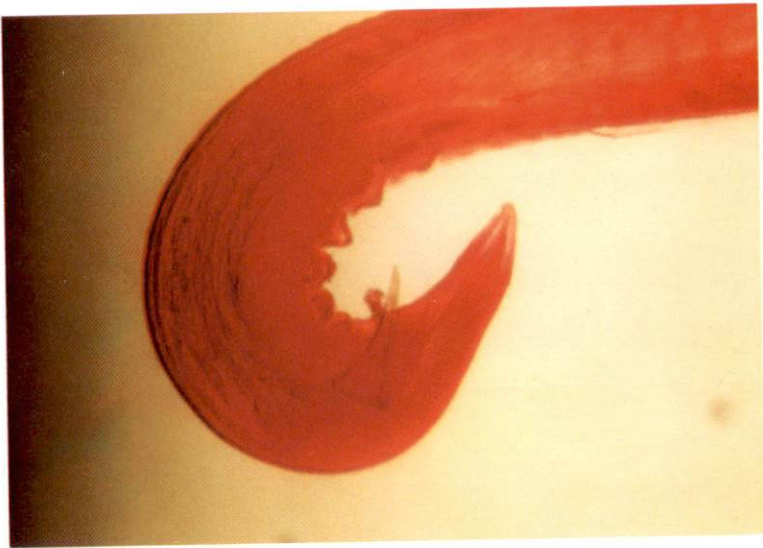


Plate 1 : Body end of male *Cosmocerca ornata*, ornamented with a large gubernaculum and eight pairs of plectanes (x 50)

Discussion

Amongst 12 marsh frogs, *R. ridibunda ridibunda* specimens collected from Anzali region, 2 specimens (16.2%) had no helminth parasites, 10 others (83.3%) were infected with one or two kinds of digenetic trematodes, including *Skryabinoeces breviansa* Sudarikov, 1950 ; *S. similis* (Loos, 1899) Sudarikov, 1950; *Gorgoderia dollfusi* Pigulevski, 1946 ; *Opisthioglyphe ranae* (Frölich, 1971) Loos, 1907 ; *Prosotocus confusus* Looss, 1894 or their metacercarian cysts, *Encyclometra colubrimurorum* (Rudolphi, 1819) Dollfus, 1931 and *Codonocephalus urniger* (Rudolphi , 1819) Lühe, 1909. *S. similis* and *O. ranae* were previously reported from Bandar Anzali (Pahlavi) (Combes and Knoepffler , 1972). *S. similis* and *C. urniger* were also reported from southwest of Iran (Mashaii, 1999). Other parasite species are recorded from Iran for the first time. Samples collected from Astara region were infected with *Diplodiscus subclavatus* Pallas, 1760 ; *P. confusus*; *C. urniger*; and *Cosmocerca ornata* Diesing, 1861. Only *Pleurogenoides medians* Olsson, 1876 ; was found in one of samples collected from Aghbaba. Except *C. urniger*, parasite species found in frogs from Astara and Aghbaba regions are also reported from Iran for the first time. All ten parasite species mentioned above, reported from western, southern and southwestern Republics of Russia and some of East European countries (Vojtkova , 1974 ; Vojtkova & Vojtek , 1975 ; Moravec *et al.*, 1987 ; see also The Checklist of Helminth Parasites of Amphibia, 1982).

Acknowledgement

We are very grateful to Dr. R. A. Bray and Mrs. E. Harris (the Natural History Museum, London) for confirming the diagnoses; Mr. F. Rajabi-pour for many cooperations ; Dr. M. Malek and Dr. A.R. Sari for valuable advice during our

work. We would like to thank Miss. N. Motamedi and Mr. H. Parsa for the help in sampling.

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