

**Occurrence and Description of
Dactylogyrus sphyrna Linstow, 1878
(MONOGENEA: DACTYLOGYRIDE)
on the Gills of an Iranian Endemic Fish
Leuciscus persidis Coad, 1981
as a New Host**

B. Jalali¹ ; M. Barzegar² and SH. Shamsi³

- 1) Veterinary Dept., Science and Research Branch, Islamic Azad University,
P.O.Box: 14515-775 Tehran, Iran
- 2) Abzigostar Consulting Engineers Co. P.O.Box : 17445-151 Tehran, Iran
- 3) Aquaculture Dept., IFRO, P.O.Box: 14155-6116 Tehran, Iran

Email: Behiar_jalali@yahoo.com

Abstract: *Leuciscus persidis* as Iranian endemic fish in Kaftar lake and its headwaters (Mesopotamian subregion, Kor-Neiriz basin and Shadkam river) has been infected with a species of *Dactylogyrus sphyrna*. Comparison of collected parasites with Euro-Asian subregion showed that the similarity of them is more than their differences, although a little difference between them was observed. In this paper also the introduce of *Dactylogyrus sphyrna* parasite to the new host is discussed.

Key Words: *Dactylogyrus sphyrna*, New host, Freshwater fish, Iran

Introduction

Leuciscus persidis, one of the native fish species found in Iranian Freshwater systems at Mesopotamian Transitional Great Region. Bychowsky (1949) reported *Leuciscus persidis* in the region for the first time. Later on Molnar and Jalali (1990a,b), Jalali (1992) and Gussev *et al.* (1993a,b) were documented this species. Shamsi & Jalali (1997) have reported several monogenean species as a host which

not recorded before. In this paper the record of *Dactylogyrus sphyrna* identification in *Leuciscus persidis* is discussed for the first time.

Materials and Methods

Fish specimens were collected from the Shadkam River, Iran during spring 1999 and carried to laboratory alive. The collection of monogeneans from the fish gills were undertaken by a stereomicroscope at 4-16 folds magnification. They were picked off alive from gills scraping by a pipette, placed under a coverslip and fixed in the ammonium picrate solution (Fernando *et al.*, 1972). Drawing and measurements were determined by using a light microscope with drawing attachment. The terminology and measurements were recorded according to Gussev (1983) in millimeters scale.

Results

Dactylogyrus sphyrna was found on the gills of *Leuciscus persidis* Coad, 1981 collected from the Shadkam River (Fig. 1).

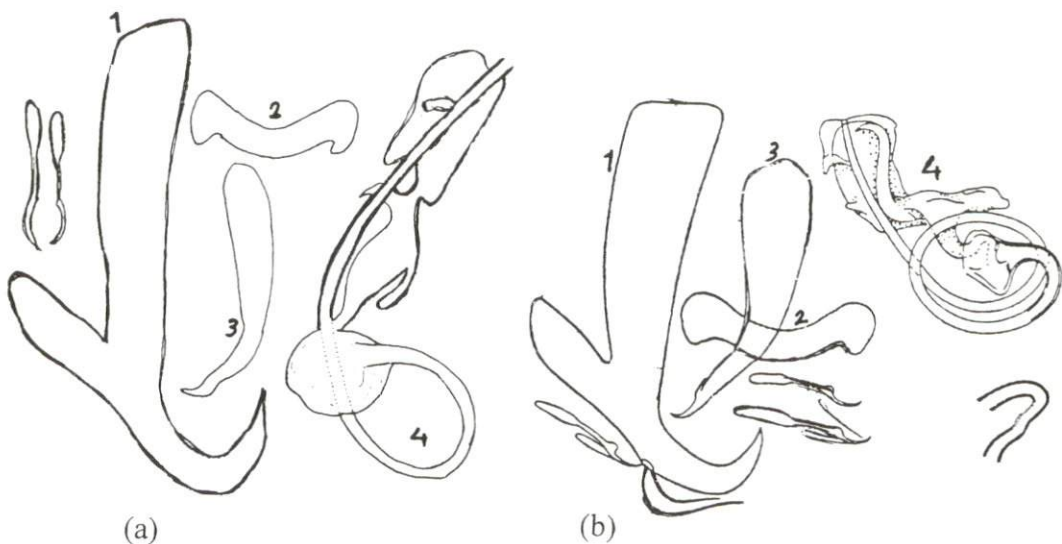


Figure 1: Sclerotized elements of *Dactylogyrus sphyrna*, a) drawn by authors, b) drawn by Gussev, 1985

1 - Main hook 2- Connective bar 3- Biggest marginal hook 4- Copulatory organ

***Dactylogyrus sphyrna* Linstow, 1878**

Host: *Leuciscus persidis* Coad, 1981

Study site: The Shadkam River near the Kaftar Lake, Mesopotamian Subregion, Kor-Neiriz basin

Study Specimens: 3

Description

The body size of the *Leuciscus persidis* was 0.924-1.239 , 0.205-0.260mm in the length and width respectively. Ventro and Dorso apical length were 0.037-0.039 and 0.054-0.057 mm respectively. The bar size was 0.004-0.005 , 0.025-0.027 mm. Hooklets were two types of thin and thick ones. The length of thin and thick types were 0.017-0.021 and 0.032-0.040mm respectively. The size of copulatory organ was 0.100-0.127 , 0.047-0.057 mm.

Discussion

The type of *sphrroid* anchors is not described in Palearctic. Despite a little difference, the experimental results supports the finding of Gussev (1989) on the morphological characters of *D. sphyrna* (table 1).

In three similar experiments, Molnar and Jalali (1992), Jalali (1995) and Shamsai and Jalali (1997) found that *Dactylogyrus* species in Iranian cyprinids exhibit less host species and infect some closely related fish. Occurrence of monogenean parasites is restricted to host genera such as *Dactylogyrus*. Also, it occurs on more than one host when they are able to hybridize (Kennedy, 1975; Molnar, *et al.*, 1984).

Jalali (1995) reported some monogenean parasites in the Caspian Sea which have been transferred to the Mesopotamian Region and endemic fishes. There are some examples such as *D. pulcher* on *Asspius vorax* in the Dez river and *Siluridiscoides vistulensis* on *Parasilurus triostegus* in the Karoon River in Khouzestan provience), *D. vistulae* on *Capoeta bushei* in Beshar River (Kohkiloohieh and Boyer Ahmad Provience). *D. sphyrna* have infected some species in the genera such as *Rutilus*, *Leuciscus* and *Aspius* in the basin of the Caspian Sea, Black Sea, Aral Sea, Baltick Sea, White Sea and other waters in the Western Siberia of Euro-Siberian Subregion (Gussev, 1985). In conclusion this

experiment and others showed that *Dactylogyrus* parasite have relatively less district host specification. Although, in Iran *D. sphyrna* have infect the *Alburnus alburnus* in the Zarrineh-Rood River (Urumia Basin in the Caspian Region) and endemic *Leuciscus persidis* in the Kaftar Lake which mentioned as a new host in this paper (Shamsi and Jalali, 1997).

Table 1: Comparison of measurements of sclerotized elements between our results and Gussev, 1989

Parameters	Our results Minimum - Maximum (Mean)	Gussev, 1985
Length	0.924-1.239 (1.014)	1.4
Width	0.205-0.260 (0.223)	0.2
Ventro-apical lenth	0.037-0.039 (0.038)	0.030-0.050
Dorso-apical length	0.054-0.057 (0.056)	0.047-0.070
Length of bar	0.004-0.005 (0.044)	0.005-0.008
Width of bar	0.025-0.027 (0.026)	0.031-0.034
Thin hooklet length	0.017-0.021 (0.019)	0.015-0.028
Thick hooklet length	0.032-0.040 (0.039)	0.034-0.052
Diameter of copulatory organ	0.047-0.057 (0.050)	0.045-0.050
Length of copulatory organ	0.100-0.127 (0.117)	_____

⊗ All measurements are according to millimeter

Molnar and Jalali (1992) reported that introduction of infected fishes by parasite to new area have propagate the infection to some genetically close relation of endemic fish in the new region. It is suggested that *D. pulcher*, *D. Chramuli* and *D. lenkorani*, as a domestic and typical Ponto-Caspian species, have recently introduced to the Mesopotamian Region, while *D. holciki* as a first parasite of *Chalcalburnus mossulensis* has showed the inhabitant of the gills of *C. chalcoides* in the Beshar River. The results of this research showed that translocated *D. sphyrna* parasite first occurred in the Kaftar Lake then infected the close relative host such as *Leuciscus persidis*. None of these original hosts presumably were not able to have ecological adaptation in the Kaftar Lake.

References

- Bychowsky, B.E. , 1949. Monogenetic tremated of some fishes of Iran. Collected by E.N. Pavloesky. Tran. Zool. Rnst. Akad. U.S.S.R. **8(4)**:870-878.
- Coad, B.W. , 1979. A provisional annotated checklist of the freshwater fishes of Iran. Journal of the Bombay Natural History Society. **76**:86-105.
- Fernando, C.H. ; Furtado, J.I. ; Gussev, A.V. ; Hanek, G. and Kakonge, S.A. , 1972. Methods for the study of freshwater fish parasites. University of Waterloo, Biology series. 76 P.
- Gussev, A.V. , 1983. The method of collection and processing of fish parasitic monogenean material. Leningrad, Nauka, 48 P. (in Russian).
- Gussev, A.V. , 1985. Parasitic metazoan: Class monogenoidea. In: "Key to the parasites of freshwater fishes of the fauna of the USSR" (Ed. Bauer, O.N. *et al.*). Leningrad, Nauka, Vol. 2, 425 P. (in Russian).
- Gussev, A.V. ; Jalali, B. ; Monlar, K. , 1993. New and known species *Dactylogyrus diesing*, 1850. (Monogenea: Dactylogyridae) from Iranian freshwater cyprinid fishes. Systematic Parasitology. **25**:221-228.

- Jalali, B. , 1992. Description of *Dogielius molnari* n.sp. (Monogenea: Dactylogyridae) from the gills of an Iranian freshwater fish *cyprinion macrostomum*. ACTA Veterinarian Hungaric. **40**:239-242.
- Jalali, B. , 1995. Current parasites and parasitic diseases of freshwater fishes in Iran. Proceeding of Fourth International Symposium of Ichthyology, 3-7 Oct. Munich, Germany.
- Jalali, B. ; Papp, M. ; Molnar, K. , 1995. Four new *Dactylogyryus* species (Monogenea: Dactylogyridae) from Iranian fishes. Folia Parasitologica, **42**:97-101.
- Kennedy, C.R. , 1975. Ecological Animal Parasitology. Blackwell Scientific Publication. Osney Nead. Oxford. 161 P.
- Molnar, K. ; Bakos, J. and Krasznai, Z. , 1984. Parasites of hybrid fishes. Parasitology. Hangarica. **17**: 29-34.
- Molnar, K. ; Jalali, B. , 1990_a. Occurrence of Monogeneans of freshwater fishes of Iran. I Dactylogyridae from fish of natural waters and description of *Dogielius molnari* n. sp. Parasitologica Hungarica. **23**: 27-32.
- Molnar, K. ; Jalali, B. , 1990_b. Occurrence of Monogeneans of freshwater fishes of Iran. II *Dactylogyryus spp.* On cultured Iranian fishes. ACTA Veterinaria Hungaric. **38**:339-342.
- Molnar, K. ; Jalali, B. , 1992. Further monogeneans from Iranian freshwater fishes. ACTA Veterinarian Hungaric. **40**: 55-61.
- Shamsi, Sh. ; Jalali, B. , 1997. First record of some freshwater fish parasites (Monogenea), in Iran. Proceeding of Third International Symposium on Monogenea. 25-30 August. Czech Republic. 76P.