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***DISCOCOTYLE OHRIDANA* N. SP. (MONOGENEA:  
DISCOCOTYLIDAE) ON THE GILLS OF OHRID  
BELVICA *SALMOTHYMUS OHRIDANUS* (PISCES:  
SALMONIDAE) FROM THE LAKE OHRID,  
MACEDONIA**

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**ABSTRACT**

*Discocotyle ohridana* n.sp. is described from the gills of Ohrid belvica *Salmothymus ohridanus* Steindachner, 1892; (syn. *Acantholingua ohridana* Hadzisce, 1961) from the Lake Ohrid, Macedonia. According our investigation the new species *D. ohridana* n.sp. differs 56.47% of observed *S. ohridanus* have been infected and average intensity of infestation is 2.84.

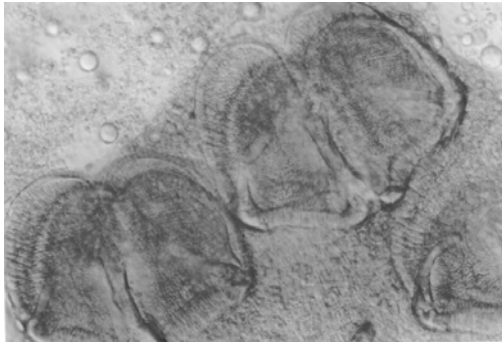
**Introduction**

Lake Ohrid occupies the farthest southwest part of the Republic of Macedonia, while a part of its surface belongs to the Republic of Albania. It is situated on 693 m above sea level. It is one of the biggest European lakes with a surface area of 358.2 km<sup>2</sup> and maximum depth of 288.7 m. It belongs to the category of oligotrophic lakes. The lake is more than 2 millions years old, and it's the oldest lake in Europe. The geographic isolation of the area and the age of the Lake Ohrid are the reasons for maintaining the greatest number of tertiary fauna remains in the Mediterranean area. The lake is inhabited by 17 autochthonous fish species, of which 10 species are endemic, and one of these is Ohrid belvica - *Salmothymus ohridanus* Steindachner, 1892 (syn. *Acantholingua ohridana* Hadzisce, 1961).

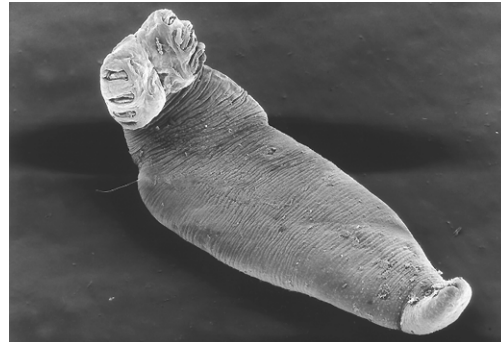
During the greatest part of the year, *S.*

*ohridanus* stays in deeper parts of the lake where temperature do not exceed 10°C. The diet of belvica is consists of zooplankton and benthic fauna. It belongs to the species with the slowest growth among macrostome' salmonids. The length of belvica is, with some exceptions, up to 32 cm, and weigh is up to 300 g.

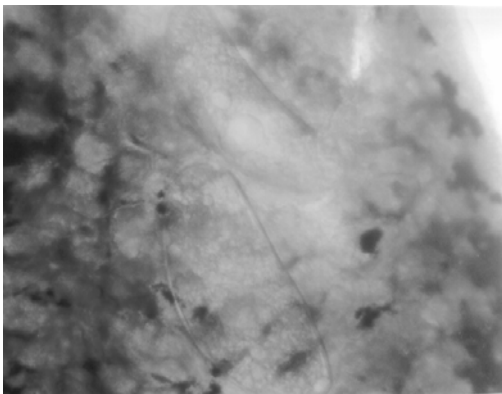
The investigation of parasite species of *S. ohridanus* has been carried out by Cincar (1) and Hristovski et al. (2). The presence of 13 parasite species has been observed: *Diplozoon* sp., *Nicolla testiobliquum*, *Eubothrium crassum*, *Eubothrium salvelini*, *Cyathocephalus truncatus*, *Proteocephalus neglectus*, *Proteocephalus torulosus*, *Raphidascaris acus*, *Cystidicoides tenuissima*, *Metechinorhynchus truttae*, *Metechinorhynchus salmonis*, *Acanthocephalus anguillae* and *Pomphorhynchus bosniacus*.



**Fig. 1.** *Discocotyle ohridana n.sp.* - Clamps (original), x 200.



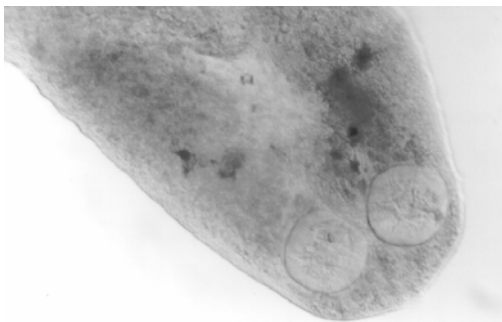
**Fig. 4.** *Discocotyle ohridana n.sp.* - Whole parasite (original SEM photography).



**Fig. 2.** *Discocotyle ohridana n.sp.* - Egg (original), x 70.



**Fig. 5.** *Discocotyle ohridana n.sp.* - Suckers (original SEM photography).



**Fig. 3.** *Discocotyle ohridana n.sp.* - Suckers (original), x 100.

### Materials and Methods

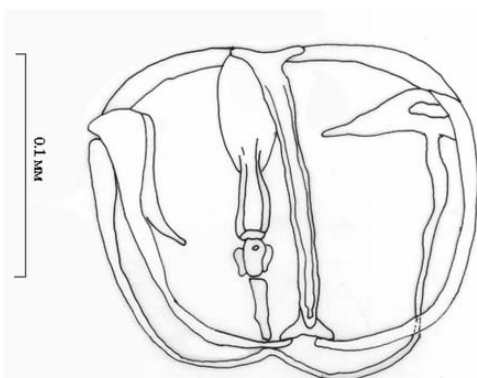
The material was collected from the summer 1998 to the summer 2001. 232 specimens of *S. ohridanus* from 3 localities of the

Lake Ohrid: Ohrid Bay, Struga and Pestani. Fishes were subjected to the routine methods of observation (3, 4).

Parasites have been identified according to Hotenovsky (3), and Bauer (5). The most successful preparations are photographed and displayed. SEM photographs are prepared in the Biological Faculty at the Leeds University, UK. Characteristic details for determination of this monogenean species are drawn with the help of AB apparatus.

### Results and Discussion

In regard to 232 observed specimens of *S. ohridanus*, 131 fishes (56.47%) have been infested with *Discocotyle ohridana n.sp* (Monogenea : Polyopisthocotylea : Discocotylidae) (Figs. 1-6).



**Fig. 6.** *Discocotyle ohridana n.sp.* - Details of clamp (original drawing).

**TABLE 1**  
Prevalence of infestation with *Discocotyle ohridana n.sp.* at Ohrid belvica (*Salmothymus ohridanus*)

Season	Locality	Prevalence of infestation		
		No. of examined fishes	No. of infested fishes	% of infested fishes
Winter	Pestani	40	10	25.0
Spring	Ohrid	25	12	48.0
	Struga	22	12	54.55
	Pestani	58	30	51.72
Summer	Ohrid	12	6	50.0
	Pestani	35	25	71.43
Autumn	Struga	38	36	94.74
	Pestani	2	0	0
IN TOTAL		232	131	56.47

**TABLE 2**  
Total prevalence and intensity of infestation with *Discocotyle ohridana n.sp.* at Ohrid belvica (*Salmothymus ohridanus*) by seasons and by localities

	Prevalence of infestation			Mean intensity of infestation (in relation to the number of infested fishes)
	No. of examined fishes	No. of infested fishes	% of infested fishes	
SEASONS				
Totally infested - winter	40	10	25.0	3.25
Totally infested - spring	105	54	51.43	3.39
Totally infested - summer	47	31	65.96	1.83
Totally infested - autumn	40	36	90.0	2.60
LOCALITIES				
Totally infested - Ohrid	37	18	48.65	3.67
Totally infested - Struga	60	48	80.0	2.64
Totally infested - Pe(tani)	135	65	48.15	2.76
IN TOTAL	232	131	56.47	2.84

The average intensity of infestation is 2.84 (Tables 1, 2).

The results of the determination of the Fulton's condition coefficient among infested and uninfested *S. ohridanus* show that it is 0.89 at uninfested fishes, while at infested is 0.87. These data reveal the influence of *Discocotyle ohridana n.sp.* on the health and conditional state of fishes, and are confirmed by a great number of investigators in the world.

The material examined:

Holotype No. 2780 stored in Museum of Natural History of Macedonia, Skopje, Macedonia.

Paratype No. 2782 stored in Museum of Natural History of Macedonia, Skopje, Macedonia.

*Discocotyle ohridana n.sp.* has the following characteristics:

Total body length including haptor is 3.0 - 4.0 mm. Dimensions of clamps are: I - 0.14 - 0.18 x 0.19 - 0.22 mm; II - 0.15 - 0.18 x 0.19 - 0.25 mm; III - 0.14 - 0.18 x

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0.20 - 0.25 mm; IV - 0.13 - 0.17 x 0.19 - 0.24 mm. Length of middle hooks is 0.019 - 0.020 mm. Dimensions of suckers are 0.010 - 0.012 x 0.009 - 0.011 mm. The intestines have 2 branches. A great number of testiculi exists (approx. 200) The copulatory organ is parenchimatous- muscular penis. The ovary is in the middle third of the body. Eggs are without filaments, with dimensions 0.30 - 0.35 x 0.12 - 0.14 mm (Figs. 1 - 6).

The life cycle and the pathological influence of *D. ohridana n.sp.* have not been investigated yet.

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