On the systematic position of Ankyrocotyle baicalense Wlasenko

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ON THE SYSTEMATIC POSITION OF

Ankyrocotyle baicalense Wlasenko

TRANSLATION SERIES NO. 6

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ON THE SYSTEMATIC POSITION OF

Ankyrocotyle baicalense Wlasenko

by

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Edited
by
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Translated
by
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Translation of this paper was undertaken as part of a long-term research project on the systematics, host-specificity and zoogeography of monogenetic trematodes. Translation and editing were accomplished in the following manner:

1. Oustinoff read translation on tape.
2. Mrs. Morales transcribed translation from tape to first typescript.
3. Hargis edited typescript.
4. Typescript retyped by Mrs. Morales.

A conscious effort has been made to keep this translation as near the original as possible. It is probably inevitable, however, that some of the nuances of meaning in the original have been distorted or lost. For this we apologize to the author and the reader.

Certain passages were difficult to translate. Where a different English phrase seems to fit the author's meaning better or serves to clarify the text, it has been inserted in brackets. Certain obvious errors or mis-spellings in the original text were changed, less obvious ones are noted with (sic).

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1Virginia Institute of Marine Science Translation Series, No. 6
2Translation and editing supported by funds from Grant No. E-2389 of the National Institutes of Health.
3Chairman, Department of Modern Languages, College of William and Mary, Williamsburg.
For convenience in referring to the Russian text the original pagination is given in the margin of the translation opposite the place where the new page begins. Occasionally figures or tables are somewhat displaced from their original page location; however, since they, themselves, are numbered sequentially, no confusion should result.

The citation of numbers for measurements and numbered structures are generally given in the translation as they were in the author's paper. This should further facilitate checking with the Russian. Unless otherwise noted, all measurements are in millimeters.

This translation is intended as a service to researchers, though effort has been made to make it comprehensible, accurate and useful, it is likely that improvements can be made. Should literary improvements or verification appear desirable it is suggested that the researcher make his own translation. Pagination is arranged to facilitate such activity. We will appreciate constructive suggestions for improvements in this and future translations.

Thanks are due to Mrs. Patricia C. Morales of the Virginia Institute of Marine Science who transcribed, typed and assembled the manuscript, and to Miss Evelyn Wells who assisted with final editing.

William J. Hargis, Jr.
ZOOLOGY

C. N. Bauer

ON THE SYSTEMATIC POSITION OF Ankyrocotyle baicalense Wlasenko

(Presented by Academician L. S. Berg, 17 October 1947)

Until now the parasites of fishes of Lake Baikal have not been studied fully although undoubtedly they offer extremely valuable data for clarification of the manner of formation of Baikal's fauna. In addition, a number of the works on this subject abound in errors which could lead to wrong conclusions.

N. M. Wlasenko's very meticulous description of a new genus and species of monogenetic trematodes, Ankyrocotyle baicalense, from the gills of Thymallus from Baikal (3) belongs among such works. Since the appearance of Wlasenko's paper this parasite has been mentioned in all Soviet manuals of fish diseases (4, 8) and in research papers and synopses concerning the fauna of Baikal (2, 6, 7).

In determining the systematic position of the genus Ankyrocotyle, N. M. Wlasenko included it in the family Polystomidae and considered it as being an intermediate form between Polystomidae and Gyrodactyliidae. The presence of 6 suckers on the attaching disc of A. baicalense served as a basis for this conclusion. However, including the genus Ankyrocotyle into the system of Monogenoidea proposed by B. E. Bychowsky (1), and following Wlasenko, it would have been necessary to place it in the order Gyrodactyloidea, suborder Polypisthocotylidea. Ankyrocotyle cannot be attributed to Gyrodactylinea, the primary suborder of this order, because it is an egg-laying form.

In comparing the diagnostic characteristics of Ankyrocotyle with those of the suborder Polypisthocotylidea, sharp contradictions are encountered immediately. According to Bychowsky (1) this order is characterized by the presence of: 1) a two-branched intestine with anastomoses, 2) a male copulatory organ with a ring of chitinous hooks, and 3) an attaching disc with hooks and 2-6 suckers. According to the description of N. M. Wlasenko, Ankyrocotyle has: 1) a sac-shaped intestine, 2) a copulatory apparatus in the shape of a chitinous tube (cirrus) with a supporting plate (accessory piece) and, 3) an attaching disc (posthaptor) with 4 middle hooks (anchors), a complexly arranged cross-piece (haptoral bar) (N. M. Wlasenko's term "pinching apparatus" is completely inadequate), and 6 suckers on the lobes of the disc. Furthermore, the anterior end of the worm is equipped with 4 finger-shaped outgrowths and two pairs of eyes.
Thus, only the presence of "suckers" likens *Ankyrocotyle* to the order Gyrodactylidea. All the remaining characteristics force us to attribute this form to the order Dactylogyridae, the suborder Tetraonchinae.

Let us consider this characteristic in greater detail. In his work N. M. Wlasenko presents a drawing of the attaching apparatus bearing suckers. But, judging from the drawing, they are expressed extremely weakly. They do not show the typical muscular rings that exist among the representatives of Polyopisthocotylinea, in *Polystomum integerrimum* for instance. On the contrary, the attaching disc on the drawing is shown with weak pit-shaped invaginations. Thus, this characteristic appears very doubtful and if it is recalled that the hosts of Polyopisthocotylinea are Elasmobranchii, Amphibia and Reptilia, whereas those of Tetraonchinae are freshwater fishes and particularly migratory fishes, the systematic position of *Ankyrocotyle* established by N. M. Wlasenko will appear extremely poorly founded (Table 1). N. M. Wlasenko notices this discrepancy himself, but attempts to explain it by citing the marine origin of the Baikal fauna, which is obviously incorrect. C. U. Vereshchagiin (2), includes *Ankyrocotyle* in the list of organisms he attributes to the marine element in the population of Baikal.

In 1940 and 1941 we collected a small amount of monogeneid material from thymallids (*Thymallus arcticus*) from the Yenisei River and from the Lena River (*Th. arcticus pallasii*). Comparing these parasites with the *Ankyrocotyle* described by N. M. Wlasenko we immediately noticed their similarity. The body among all these forms is extended, and "the little neck" mentioned by N. M. Wlasenko, is far from being always noticeable but depends on the degree of contraction of the parasite. The posterior end of the body terminates in a disc /posthaptor/ with 6 lobes. We were unable to detect, on whole mounts or in sections, even weakly expressed pit-shaped suckers on these lobes. The hooked attaching apparatus corresponds to the drawings of N. M. Wlasenko; furthermore, we found the very small lateral hooks typical for the suborder Tetraonchinae on our specimens, which were apparently omitted by N. M. Wlasenko. The copulatory apparatus, which represents the most constant characteristic and systematic sign in Monogenoidea, agrees with the description given by N. M. Wlasenko (Fig. 1).

If we add to all this the presence in our specimens of 4 finger-shaped outgrowths, 2 pairs of eyes and 1 testis, which is also indicated for *A. baicalense* we must conclude that the Monogenoidea from the gills of Thymallus from Baikal, Yenisei and Lena are completely identical. The only characteristic distinguishing them, namely "suckers" in *A. baicalense*, is based on some misunderstanding.

Recently we were able, thanks to the kindness of B. E. Bychowsky, to examine Monogenoidea collected from the gills of the European thymallid (*Thymallus thymallus*) from the Pinega River (basin of northern Dvina) and from the gills of *Thymallus* sp. from Baikal. All the samples examined
had been identified by B. E. Bychowsky as \textit{Tetraonchus borealis} (Olsson, 1893). Comparison of these samples with our Monogenea from the gills of Siberian \textit{Thymallus} sp. show that we are dealing with the same species of worm (Fig. 1). Inasmuch as this species was first described by Olsson (9), it must be recognized that the genus \textit{Ankyrocotyle} and species \textit{A. baicalense} do not exist independently, but that the typically fresh-water paleo-arctic species \textit{Tetraonchus borealis} parasitizes the gills of fishes the genus \textit{Thymallus} (\textit{Th. thymallus} and \textit{Th. arcticus} with subspecies), and that the range of \textit{Tetraonchus borealis} includes all north Europe and the whole of Siberia including Biakal. Thus, the monogenetic trematodes from the gills of the Baikal \textit{Thymallus} sp. cannot in any way be used to support the supposed marine connections of the fauna of Baikal which was envisaged by N. M. Wlasenko (3) and G. U. Vereshchiagin (2).

In conclusion I express my hearty gratitude to B. E. Bychowsky for the material he placed at my disposal and for his aid, and I also thank L. F. Kashina for the drawings.

All Union Scientific Research Institute of the Fish Industry

Of Lakes and Rivers

**Literature Cited**


4. V. A. Dogiel, /Parasitological Diseases of Fishes/, 1932.


8. E. M. Lyman, /Diseases of Fishes/, 1939

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<th>Diagnostic characteristics</th>
<th>A. baicalense according to Wlasenko</th>
<th>Family Polystomidae</th>
<th>Family Tetraonchidae</th>
<th>Tetraonchus borealis from gills of Thymallus</th>
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<td>No. of middle hooks</td>
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<td>Elasmobranchii</td>
<td>Freshwater and migratory fishes</td>
<td>European and Siberian Thymallus with subspecies</td>
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FIG. 1. Connecting plate (a) and copulatory organ (b) of *Tetraonchus borealis*.

I— from gills of *Thymallus arcticus* (Yenisei River),
II— from gills of *Thymallus arcticus pallasi* (Lena River),
III— from gills of *Th. arcticus baicalensis* (Baikal),
IV— from gills of *Th. thymallus* (northern Dvina).