

## MORPHOLOGY AND DEVELOPMENT OF *PHILOMETRA ABDOMINALIS* NYBELIN, 1928

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Species classified into the genus *Philometra* are fairly frequent fish parasites in Hungary. The morphological characteristics and life-history of three of them, viz., *Ph. ovata* (Zeder, 1803), *Ph. rischta* (Skrjabin, 1917) and *Ph. sanguinea* (Rud., 1819) have recently been dealt with in this periodical (MOLNÁR, 1966a and b). In the present paper *Ph. abdominalis* Nybelin, 1928 is redescribed and its life history is dealt with.

The name *Ph. abdominalis* was proposed by NYBELIN (1928) to accommodate specimens which, though not tallying with RUDOLPHI's *Ph. sanguinea*, a parasite of *Carassius*, were assigned to that species by CREPLIN (1825), DIESING (1861), LINSTOW (1874) and other authors, who found them in various cyprinid fishes. NYBELIN (1928), while redescribing RUDOLPHI's *Ph. sanguinea*, failed to give a detailed description of *Ph. abdominalis*. However, in a later report (NYBELIN, 1931) he designated as its type those *Philometra* specimens which were collected by LINSTOW from *Gobio gobio* (syn. *Gobio fluviatilis*) and are preserved in the Natural History Museum of Berlin. In that paper NYBELIN presented also a table to differentiate *Ph. abdominalis* from *Ph. sanguinea* (Rud., 1819), *Ph. opercularis* (NYBELIN, 1931) and *Ph. ovata* (Zeder, 1803). The table clearly differentiates *Ph. sanguinea* females from the three other species on account of their cuticular papillae. Obvious differences exist also between *Ph. rischta* (syn. *Ph. opercularis*) on the one hand, and *Ph. ovata* and *Ph. abdominalis* on the other, because *Ph. rischta*, due to some morphological features as well as its localization, appears to represent a well-distinguishable species. However, as far as *Ph. ovata* and *Ph. abdominalis* are concerned, NYBELIN only discriminated them on account of their body colour and dimension. The tail-end is said to be rounded in both species.

These details given by NYBELIN appear to be somewhat inconclusive, for the *Philometra* species dealt with by CREPLIN, DIESING and LINSTOW, though in fact not identical with *Ph. sanguinea* (Rud., 1819), are most probably not conforming with *Ph. abdominalis* either. The mentioned authors had after all to do with *Ph. ovata*. This conception seems plausible; otherwise the name *Filaria cyprini rutili* created by CREPLIN (1825) would have priority over *Ph. abdominalis*, provided that the name is not invalidated by any provision of the international Code or has not been suppressed by the Commission.

Nevertheless, the specimens of *Ph. abdominalis* from *Gobio gobio*, designated by NYBELIN as types for that species, have proven according to my reexamination, with some minor corrections, to represent a valid species.

Later on DOGIEL and BYCHOWSKY (1939) observed two inconspicuous processes on the tail-end of *Ph. ovata* females, while IZYUMOVA (1962) had no difficulties in differentiating the two species on account of the shape of the tail-end, whether rounded or pointed, as well as with regard to the presence or absence of the processes mentioned. According to MOLNÁR (1966) the colour of live specimens of *Ph. ovata* is bright red, while NYBELIN's specimens are said to be of yellowish white hue.

Several authors, according to their having or not having realized the inconspicuous tail processes, were assuming to have met both species in various cyprinid hosts.

So far only one report has dealt in detail with *Ph. abdominalis* (LELEK, 1962/3). But this author while recording detailed statistical data on the frequency of that parasite in *Gobio gobio* from the river Rokitna, did not concern with details of its morphology and life cycle.

In the course of faunistic studies, I found in the abdominal cavity of some fish species (*Phoxinus phoxinus*, *Gobio gobio*, *Leuciscus cephalus*, *Leuciscus leuciscus*) *Philometra* specimens whose females bore a striking resemblance to *Ph. ovata* females, and also their actual developmental stage correlated with that of the latter; apparently the only inconspicuous difference was the presence of two processes on the tail-end. However, the male specimens found in the same host were readily distinguishable from *Ph. ovata* males by the shape and size of their accessory reproductive organs (spicules, gubernaculum).

In order to gain satisfactory information for a reliable identification of the species in question, I tried to collect data to show its distribution in various fish hosts. The examined fishes and their actual stages of infestation with *Ph. abdominalis* are summarized in Table I. Investigations conducted during all seasons of the year have revealed that by the end of May females of the *Philometra* species in question reached 10–12 cm in length, i.e., nearly twofold the size given for this species by NYBELIN (1931), IZYUMOVA (1962), and others. Moreover, the parasites had processes on the tail-end, instead of being smooth as claimed by the cited authors. In spite of these differences, the species found by me was probably identical with *Ph. abdominalis*, the species described by NYBELIN: their specimens originated from *Gobio gobio*, the host found most frequently infested by me.

Later on I had the opportunity to examine the original specimens collected by LINSTOW deposited in the Berlin Museum of Natural History.\* The specimens kept in alcohol were more or less intact juvenile females of 4–6 cm in length, showing already primordial eggs. On the tail-end of the unshrunk specimens two inconspicuous processes were clearly visible. The exact date

\* I wish to extend my hearty thanks to Dr. G. HARTWICH, who kindly made it possible to have re-examined this valuable material.

Table I  
Infestation of various fish species with *Philotetra abdominalis*

Name of fish species	Num-ber of exam-ined fish speci-mens	Num-ber of infested speci-mens	Per cent. exten-sity of infesta-tion	Quality of infestation															
				With adult or developing ♀♀		With retarded ♀♀ and ♂♂		With retarded ♀♀ alone		With ♂♂ alone									
				Infested fishes	Num-ber of para-sites per host	Infested fishes	Num-ber of para-sites per host	Infested fishes	Num-ber of para-sites per host	Infested fishes	Num-ber of para-sites per host								
<i>Gobio gobio</i>	40	20	50.0	6	15	1-5	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Phoxinus phoxinus</i>	210	27	12.8	9	4.3	1-3	3	1.4	2-3	9	4.3	1-3	5	12.5	1-3	9	22.5	1-4	1-4
<i>Leuciscus cephalus</i>	36	27	75.0	5	13.9	1-3	20	55.5	2-15	1	2.8	1	1	2.8	1	1	2.8	1	1-2
<i>Leuciscus leuciscus</i>	6	4	66.6	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Barbus meridionalis Petényi</i>	13	2	15.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Alburnoides bipunctatus</i>	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Chondrostoma nasus</i>	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Gobio albipinnatus</i>	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Nemachilus barbatulus</i>	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Esox lucius</i>	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Lota lota</i>	6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

