

Recent Observations on the Developmental Cycle of *Philometra obturans* (Prenant, 1886) (Nematoda: Philometridae)

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ABSTRACT. It was substantiated by infection experiments that nematode larvae parasitic in the vitreous body of the eye of the carrier host pikeperch (*Stizostedion lucioperca*) develop to *Philometra obturans* (Prenant, 1886) stages after transfer to the pike (*Esox lucius*) as final host.

After the original incomplete description of *Philometra obturans* females by PRENANT (1886), the parasite has been studied recently in a greater detail.

The first adequate information on the females of *Ph. obturans* was presented by MORAVEC (1971) and it was also MORAVEC (1978a) who gave a detailed description of the females and the single male specimen found.

Prior to MORAVEC, MOLNÁR (1976) studied the developmental cycle of the parasite under experimental conditions. Cyclopeans experimentally infected with *Ph. obturans* larvae as intermediate hosts were fed to carp fry as carrier hosts, and the latter were placed with pike (*Esox lucius*) fry, which became infected with the parasite through ingestion of the carp. *Ph. obturans* stages recovered from the peritoneum of the pikes enabled me to describe the males of the species for the first time, along with subgravid females. MORAVEC (1978b) followed up the development of *Ph. obturans* in intermediate hosts, and was able to infect pikes directly, with copepods containing infective larvae. The observations of MOLNÁR (1976) and MORAVEC (1978b) have shown that *Ph. obturans* may infect the pike both directly, through ingestion of infected cyclopeans, and indirectly, via mediation of carrier hosts. Taking into consideration the predatory habit of the final host, the indirect route of infection is in all probability prevalent. Until recently no data were presented on the location of *Philometra* larvae inside the body of carrier hosts. A progress in this field was made by MORAVEC and DYKOVA (1978) who demonstrated the occurrence of larvae, previously described by MOLNÁR (1970) as *Agamospirura* sp., in the ocular vitreous body of the perch (*Perca fluviatilis*) and rudd (*Scardinius erythrophthalmus*), and presented morphological evidence in support of their identity with *Ph. obturans* larvae.

The present experiments were performed to obtain biological evidence of the identity of the nematode larvae frequently found in the vitreous body of the pikeperch (*Stizostedion lucioperca*) with developmental stages of *Ph. obturans*.

MATERIALS AND METHODS

Pike fry hatched and reared in the laboratory were used as susceptible hosts. The pikes were fed on fish also reared in the laboratory, to furnish infection-free conditions.

The vitreous bodies of 2-summer to 3-summer pikeperches, taken of the Lake Velence, were used as infectious material. The vitreous bodies contained 10-30 nematode larvae on the average. Larvae recovered from the eyes of pikeperches were placed in saline, and were injected into the abdominal cavity of the carp and grasscarp fry used to feed the pikes.

The infected fry were exterminated and sectioned under a stereomicroscope. Impression smears of the organs were examined for the presence of parasite stages.

RESULTS

The first infection experiment was performed in the spring, 1979. Two 4 cm long pikes were infected with larvae collected from vitreous bodies, by the mediation of 2 carps fed to each, and were exterminated 30 days later. One pike host harboured in the ocular cavity one 2.1 mm long *Philometra* female, which showed the same morphological features as the *Ph. obturans* females seen in our earlier infection experiments (MOLNÁR, 1976).

In the second experiment, performed in the autumn, 1979, three 12 cm long pikes were infected with the parasite, each on four occasions, through feeding on carp and grass-carp fry carrying larvae. On extermination at 4, 6 and 8 weeks after experimental infection, respectively, all three hosts proved to be negative in respect of *Ph. obturans* infection.

DISCUSSION

The results of the infection experiments were not unequivocal, as only one of the five infected hosts harboured a *Ph. obturans* stage, but this finding has in itself substantiated the observation of MORÁVEC and DYKOVÁ (1978) that the larvae parasitic in the vitreous body of Percidae and Cyprinidae did in fact represent larval stages of *Ph. obturans*, which were capable of continuing their life cycle in the pike host. The *Philometra* female found by us did originate from the experimental infection; it no longer showed larval features, and with its 2.1 mm long body it was three times as large as the stages harboured by the intermediate hosts or carrier hosts. It follows that this stage not only established itself in the new host, but also continued its developmental cycle.

As on the basis of earlier findings (MOLNÁR, 1976) we expected to detect developing stages on the peritoneum and around the swimming bladder of the pikes, it was rather surprising to find the parasite in the vitreous body. Regarding, however, that the single male found by MORÁVEC (1978a) also originated from the vitreous body of pike it has to be supposed that the early developing stages of *Ph. obturans* pass through the eye bulb while migrating.

REFERENCES

- MOLNÁR, K. (1970): Beiträge zur Kenntnis der Fischparasitenfauna Ungarns VI. Cestoda, Nematoda, Acanthocephala, Hirudinea. - *Parasit. Hung.*, **3**, 51-76.
- MOLNÁR, K. (1976): Data on the developmental cycle of *Philometra obturans* (Prenant, 1886) (Nematoda: Philometridae). - *Acta Vet. Acad. Sci. Hung.*, **20**, 183-188.
- MORÁVEC, F. (1971): Nematodes of fishes in Czechoslovakia. - *Acta Sc. Nat. Brno*, **5**, 1-49.
- MORÁVEC, F. (1978a): Redescription of the nematode *Philometra obturans* (Prenant, 1886) with a key to the philometrid nematodes parasitic in European freshwater fishes. - *Folia Parasit. (Praha)*, **25**, 115-124.
- MORÁVEC, F. (1978b): The development of the nematode *Philometra obturans* (Prenant, 1886) in the intermediate host. - *Folia Parasit. (Praha)*, **25**, 303-315.
- MORÁVEC, F. - DYKOVÁ, I. (1978): On the biology of the nematode *Philometra obturans* (Prenant, 1886) in the fishpond system of Mácha Lake, Czechoslovakia. - *Folia Parasit. (Praha)*, **25**, 231-240.
- PRENANT, L. A. (1886): Recherches sur les vers parasites des poissons. - *Bull. Soc. Sc. Nancy* (1885), ser 2, **7**, 89-130.

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