

Philometra kobuleji sp. n. (Nematoda: Philometridae)

KALMAN MOLNAR* and C. H. FERNANDO

Department of Biology, University of Waterloo,
Waterloo, Ontario, Canada N2L 3G1

ABSTRACT

Philometra kobuleji (Nematoda: Philometridae) is described as a new species from the abdominal cavity of a North American freshwater fish, *Catostomus commersoni*.

During a parasitological survey on stream fishes of Southern Ontario, males and females of a *Philometra* species were collected from white suckers, *Catostomus commersoni* (Lacépède). This parasite differs from all known *Philometra* species recorded by Hoffman (1967) in North America.

MATERIAL AND METHODS

In 1973 and 1974, 27 specimens of *Catostomus commersoni* were examined. The fish were transported to the laboratory alive and were examined immediately afterwards. Nematodes were collected from the fish in isotonic saline, and after fixation and preservation in ethanol they were cleared in lactophenol.

RESULTS

All fish examined were found to be infected with a *Philometra* species, one host usually harbouring 2-27 parasites. Only three hosts were found to harbour mature larvigerous females (a total of five specimens) in the abdominal cavity. The other fish harboured only males and retarded females in the subserosa of the airbladder.

Description

(based on 4 females and 20 males. All measurements in millimetres unless stated):

Male: The transparent males are minute, 2.1-3.0 (2.5) long. Their cylindrical body tapers slightly at the anterior end. The greatest width, 0.056-0.061 (0.059) was near the tail end. In the mid-region it measures 0.052-0.061 (0.057) and at the nerve ring 0.035-0.037 (0.036). The cuticle is smooth and thin. The head is rounded. Head papillae were not observed. The mouth is simple, with three lips. The oesophagus is muscular, 0.375-0.440 (0.418) long, and slightly swollen near the mouth. The caudal end is blunt, with two prominent lateral papillae connected by a narrow inconspicuous membrane. They have two relatively long, nearly equal spicules directed by a gubernaculum. The anus opens ventrally near the posterior end. The right spicule is 0.109-0.134 (0.120) long, the left 0.106-0.126 (0.115). The gubernaculum is a bent chitinous plate with a spear-like end, measuring 0.065-0.074 (0.072) in length.

* Present address: Veterinary Medical Research Institute, Hungarian Academy of Sciences, 1580 Budapest P.O. Box 18, Hungary

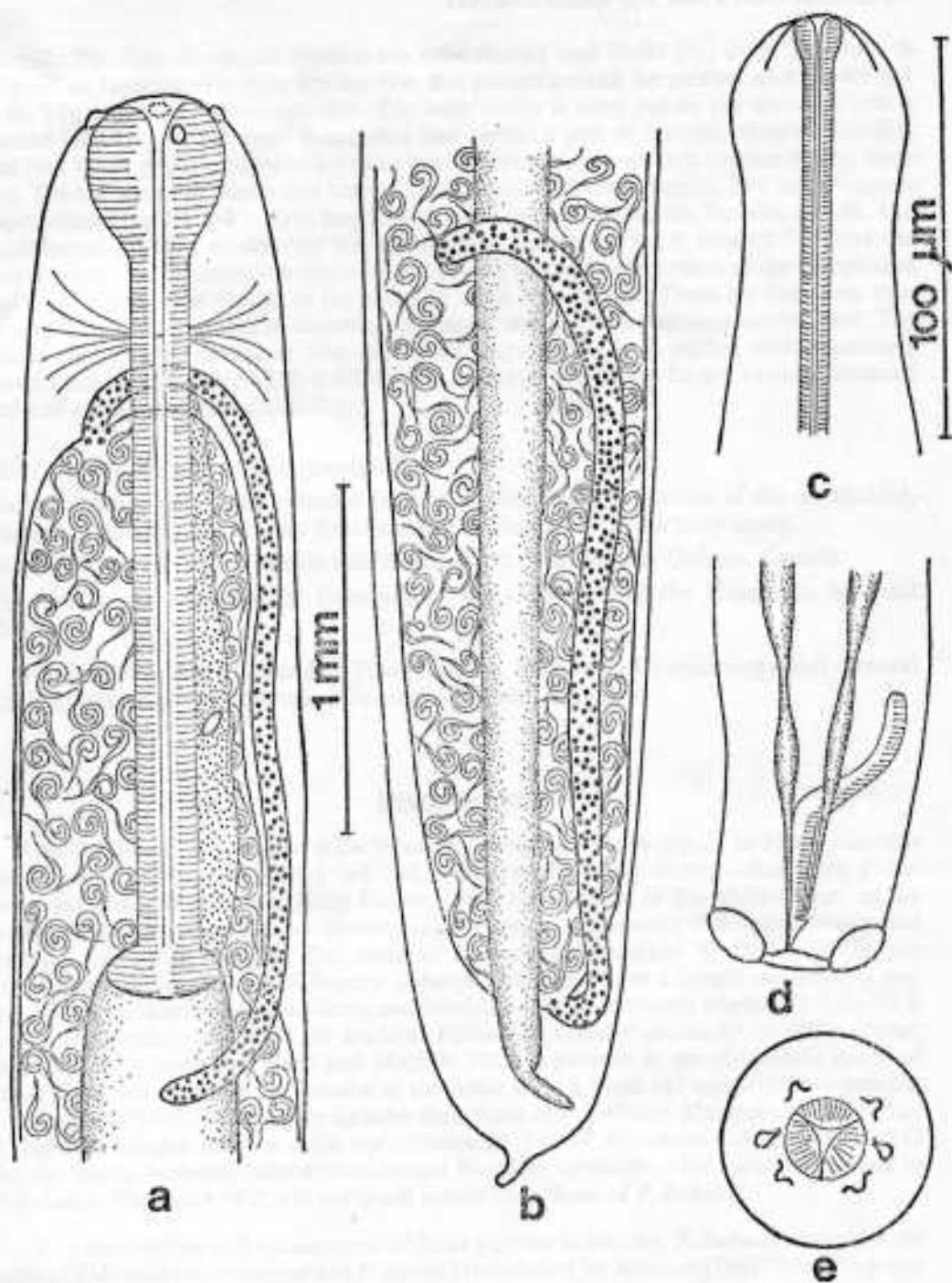


FIG. 1. a. Anterior end of female; b. Posterior end of female; c. Anterior end of male; d. Posterior end of male; e. En face view of female.

Female: The fully developed females are red-coloured and 86-97 (91) long. The body is cylindrical, tapering only near the anterior and posterior ends. Its greatest width is 0.9-1.1 (1.0). The cuticle is smooth and thin. The body cavity is filled out by the uterus, which is packed with larvae. The head is rounded and carries a pair of laterally situated amphids and four fleshy papillae in the submedian line. The rim of the mouth is surrounded by three lips. The tail tapers at the tip and bears a small dorsally directed papilla. The oesophagus is short, measuring 1.1-1.4 (1.2) in length. It is swollen near the mouth, forming a bulb. The oesophageal gland is moderately well developed. The nerve ring is located 0.3 from the anterior end. The intestine is larger in diameter than the posterior portion of the oesophagus and ends blindly near the tip of the tail. The vulva is atrophied. There are two long, thin ovaries which run in opposite directions and are connected by a common uterine duct. The uterus ends nearby the nerve ring and anus, respectively. It is packed with vigorously moving larvae measuring 0.320-0.370 (0.350) in length. The larvae have a rounded anterior end and a sharply pointed tail.

Host: *Catostomus commersoni* (Lacépède)

Habitat: Males, young and retarded females localize under the serosa of the air bladder, whereas developing and mature females establish themselves in the body cavity.

Locality: Laurel Creek, Waterloo and Bronte Creek, near Milton, Ontario, Canada.

Type specimens: Deposited in Helminthological Collection of the Hungarian National Museum.

The species is named after Dr. Tibor Kobulej, Professor of Parasitology and General Zoology, University of Veterinary Science, Budapest, Hungary.

DISCUSSION

The females of this parasite differ from all known *Philometra* species in North America by their one-papillated tapering tail end. They can be easily distinguished from *Philometroides nodulosa* (Thomas, 1929) Dailey, 1966 also parasitic in the white sucker, as the females of the latter species are shorter, have a cuticle with evenly distributed bosses and typically localize in the skin. The males of *P. nodulosa*, described by Dailey (1966), are morphologically similar to *Philometra kobuleji* males, but have a longer oesophagus and spicules and a shorter gubernaculum, and localize in the head tissues whereas *P. kobuleji* is found in the subserosa of the air bladder. *Philometra kobuleji* can easily be differentiated also from *P. cylindracea* (Ward and Magath, 1916) a parasite in the abdominal cavity of *Percia flavescens*, because the females of the latter have a blunt tail end with two papillae and the males have much shorter spicules than those of *P. kobuleji*. The tapering tail end of *P. kobuleji* females bears a close resemblance to that of *Philometra alii* Rasheed, 1963 females which, however, have a cuticularised bead-like structure in the mouth not found in *P. kobuleji*. The males of *P. alii* are much longer than those of *P. kobuleji*.

As to the number and arrangement of head papillae in females, *P. kobuleji* resembles the species (*Philometra abdominalis* and *P. rischta*) transferred by Rasheed (1963) from the genus *Philometra* into the new genus *Thwaitia*.

Since, however, *P. kobuleji* females lack lobe-like head papillae and have a tapering tail, the species does not meet the criteria for the genus *Thwaitia*.

TABLE 1

Comparison of sizes of *Philometre kobuleji*, *P. alii*, *P. cylindrica* and *Philometroides nodulosa* (all measurements in mm, means in parenthesis)

	<i>P. kobuleji</i>		<i>P. alii</i>		<i>P. cylindrica</i>		<i>P. nodulosa</i>	
	Own material	After Raabold, 1963	After Inglis and Ogden, 1964	Own material	After Dailey, 1966	Own material	After Dailey, 1966	
Length of body	♀♀ 86-97 (91)	♂♂ 2.1-3.0 (2.5)	♀♀ 150	♂♂ 6.43-7.26	♀♀ 91-102 (97)	♂♂ 2.5-2.8 (2.7)	♀♀ 37.1-44.5 (40.8)	♂♂ 2.3-2.7 (2.49)
Width of body	0.9-1.1 (1.0)	0.056-0.061 (0.059)	0.37	0.10-0.16	0.8-1.0 (0.9)	0.031-0.041 (0.035)	0.50-0.60 (0.55)	0.031-0.048 (0.042)
Length of oesophagus	1.1-1.4 (1.2)	0.375-0.440 (0.418)	0.95-1.8	0.39-0.40	2.0-2.9 (2.3)	—	2.87-3.12 (2.97)	0.623-0.688 (0.639)
Mouth	simple	—	with bead-like structure	—	simple	—	simple	—
Tail end	tapering at the tip	—	tapering at the tip	—	blunt	—	blunt	—
Length of right spicule	—	0.109-0.134 (0.120)	—	0.680-0.830	—	0.049-0.071 (0.060)	—	0.137-0.164 (0.152)
Length of left spicule	—	0.106-0.126 (0.115)	—	0.360-0.410	—	0.049-0.075 (0.061)	—	0.130-0.161 (0.143)
Length of gubernaculum	—	0.065-0.074 (0.072)	—	0.10-0.12	—	0.034-0.043 (0.038)	—	0.043-0.059 (0.052)
Location	abdominal cavity	serosa of the airbladder	mesentery	ex mesentery	abdominal cavity	serosa of the airbladder	head tissues	head tissues
Hosts	<i>Carotomus commersoni</i>	<i>Pirincampus sp. pirincampus</i>	<i>Pirincampus sp. pirincampus</i>	<i>Pirincampus sp. pirincampus</i>	<i>Pirincampus sp. pirincampus</i>	<i>Pirincampus sp. pirincampus</i>	<i>Carotomus commersoni</i>	<i>Carotomus commersoni</i>

Morevec and Ergens (1970) found similar interstages in the character of the mouth papillae in some Central European species and did not, therefore, accept the existence of the genus *Thwaitia*, considering it as a synonym of the genus *Philometra* Costa, 1945.

In view of this we regard our species as belonging to the genus *Philometra*.

The high prevalence and intensity of infection in the suckers (*Catostomus commersoni*) studied indicates that *P. kobuleji* is a common fish parasite in the small creeks of Ontario. Nevertheless, the low number of females developing in the abdominal cavity seems to suggest that these are able to complete their life cycle in only a minor portion of hosts, whereas in the others the females cease to develop at a very early stage, surviving in a retarded form in the subserosa of the air bladder. The same phenomenon was observed earlier in other philometrids (Molnar, 1969).

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