Range Extension Records for *Cooperia curticei*, *Ostertagia ostertagi*, *Setaria yehi*, and *Trichuris ovis* in White-tailed Deer from Kentucky

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Abstract: In order of prevalence, the following helminths (all nematodes) were recovered from 31 white-tailed deer (*Odocoileus virginianus*) from Kentucky: *Ostertagia ostertagi*, *Oesophagostomum venulosum*, *Gongylonema pulchrum*, *Dictyocaulus viviparus*, *Ostertagia mossi*, *Trichuris ovis*, *Pneumonostongylus tenuis*, *Capillaria bovis*, *Setaria yehi*, and *Cooperia curticei*. *Cooperia curticei*, *O. ostertagi*, *S. yehi*, and *T. ovis* are new state and range extension records.

There are very few reported accounts of helminths from the white-tailed deer in Kentucky. As a result, it was felt that a more complete study of the helminths should be done on the white-tailed deer in Kentucky and is the basis for this report.

Materials and Methods

By a special permit from the Director of the Kentucky Department of Fish and Wildlife Resources, 14 deer were taken from the Lexington Blue Grass Army Depot (Madison County) and 17 deer from Land Between the Lakes recreation area in western Kentucky. The deer obtained were aged and weighed. They were all young bucks (1½–2½ years of age) and taken during the fall of 1973 and 1974.

The viscera and heads were placed in plastic bags, perforated, and flooded with 10% formalin (for preservation of contents until examined). The bags were placed inside garbage cans and returned to the laboratory for examination.

The heads were examined for meningeal worms by the technique used by Prestwood and Smith (1969). Internal organs were separated and examined externally for the presence of helminths. The liver and lungs were cut into small sections and placed under a 3X dissecting microscope. The ducts were severed longitudinally and the passageways examined. In addition, the lungs were washed into a 500-ml beaker of water which was then poured through a No. 100 mesh screen in order to expose fourth- and fifth-stage larval lungworms (Prestwood et al., 1971).

The esophagus was split longitudinally and examined according to Samuel and Beaudoin (1966). The majority of the contents of the rumen, reticulum, omasum, and abomasum were flushed through a No. 20 sieve and examined for stomach worms. Afterwards, the Baermann technique was used on the remainder of the stomach contents. The contents of the cecum, large and small intestines, were washed through a No. 20 sieve and examined. Feces were removed and examined according to Levine et al. (1960). The kidneys and pancreas were sectioned and examined under a 3X dissecting microscope.

Nematodes found were stored in 7% formalin. They were later stained with Mayer's paracarmine, cleared with methanol and xylol, and mounted in permount (White, 1973). Adult nematodes were identified by using the descriptions of Becklund and Walker (1968, 1969), Levine (1968), and Olsen and Fenstermacher (1943). Confirmation of *S. yehi* and *T. ovis* was done by Dr. A. K. Prestwood.

Results and Discussion

The only helminth parasites infecting white-tailed deer in this study were nematodes. No trematodes, cestodes, or acanthocephala were found. Those nematodes recovered are given in Table 1. Levels of parasitism for each nematode were low even though the prevalence of three (*O. ostertagi*, *O. venulosum*, and *G. pulchrum*) was high. This may be due to...

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2 To whom reprint requests should be sent.
Table 1. Summary of nematodes recovered from white-tailed deer in Kentucky.

<table>
<thead>
<tr>
<th>Parasite</th>
<th>% infected*</th>
<th>Mean intensity of infection</th>
<th>Location in deer</th>
<th>New state record</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ostertagia ostertagi</td>
<td>75</td>
<td>10</td>
<td>Abomasum</td>
<td>X</td>
</tr>
<tr>
<td>Oxyuridium venulosum</td>
<td>53</td>
<td>11</td>
<td>Cecum</td>
<td></td>
</tr>
<tr>
<td>Gongylonema pulchrum</td>
<td>47</td>
<td>4</td>
<td>Esophagus</td>
<td>X</td>
</tr>
<tr>
<td>Dictyocaulus viviparous</td>
<td>28</td>
<td>13</td>
<td>Bronchi</td>
<td></td>
</tr>
<tr>
<td>Ostertagia mossi</td>
<td>21</td>
<td>17</td>
<td>Abomasum</td>
<td></td>
</tr>
<tr>
<td>Trichurus axi</td>
<td>15</td>
<td>3</td>
<td>Cecum</td>
<td>X</td>
</tr>
<tr>
<td>Pneumonostomum tennis</td>
<td>11</td>
<td>6</td>
<td>Meningeal surface of brain</td>
<td>X</td>
</tr>
<tr>
<td>Capillaria brovii</td>
<td>9</td>
<td>24</td>
<td>Small intestine</td>
<td></td>
</tr>
<tr>
<td>Setaria yehi</td>
<td>0</td>
<td>13</td>
<td>Peritoneal cavity</td>
<td>X</td>
</tr>
<tr>
<td>Cooperia curticei</td>
<td>4</td>
<td>4</td>
<td>Small intestine</td>
<td></td>
</tr>
</tbody>
</table>

* Sample size was 31 deer.

either the isolated nature of the habitats, the dry elevated nature of the habitats, the efficient management of the deer herds, or the absence of human inhabitants with their accompanying domestic or feral animals. Since worm burdens and egg counts were low, there was no apparent effect of parasitism on the deer examined. No anomalies related to parasitism were observed.

The finding of C. curticei, O. ostertagi, T. ovii, and S. yehi constitute new state and range extension records for the white-tailed deer. With the aforementioned exceptions, all other nematodes recovered have previously been reported in white-tailed deer from Kentucky (Prestwood and Smith, 1969; Prestwood et al., 1970, 1971).

No appreciable differences existed in the presence or prevalence of nematodes from the two geographic populations sampled. Other studies in the United States, such as the one by Beaudoin et al. (1970) in Pennsylvania, have shown differences in parasite prevalence from two geographically separated populations of white-tailed deer.

In summary, this report gives additional geographic distribution records of nematodes from the white-tailed deer. However, more regional distribution studies need to be done in Kentucky before any definite conclusions (re: specific parasite distribution and prevalence) can be made for the state as a whole, as has been done for several southern states (Prestwood and Smith, 1969; Prestwood et al., 1971, 1973).

**Literature Cited**


A Description of the Male and Redescription of the Female of *Philometra cylindracea* Ward and Magath, 1916 (Nematoda: Philometridae)\(^1\)

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**ABSTRACT:** The male and mature female are described for the first time and the gravid female description is emended to include three lips and some additional measurements.

*Philometra cylindracea* is a nematode which occurs in the body cavity of a wide range of fishes. It has been reported from 17 species of fishes in North America from 12 genera and eight families. In Lake Erie *P. cylindracea* occurs in the yellow perch, *Perca flavescens*. The known range of geographical distribution in North America extends from northwest Ontario (Dechtiar, 1972) southward to Ohio (Hare, 1943) and from New York (Van Cleave and Mueller, 1932) westward to Wisconsin (Fischthal, 1953).

The original description by Ward and Magath was based exclusively on gravid female specimens. Mature females, with unatrophied vulva and vagina, and males have never been described. As a result of this study material is now available for a more complete description.

Nematodes recovered from *Perca flavescens* were killed in AFA and fixed in AFA for 24 hr. They were preserved in 10% glycerin alcohol, cleared, and studied in glycerin. Several en face views were studied in glycerin jelly and agar. Drawings were made with the aid of a light microscope fitted with a drawing tube. All measurements are in microns unless otherwise indicated. The range is followed by the average in parentheses.

**Philometra cylindracea**

**Ward and Magath, 1916**

(Figs. 1-9)

**Description**

Philometridae Baylis and Daubney, 1926. Slender nematodes. Living worms red in color or translucent. Oral opening with three lipped structures.

**Male (seven specimens):** Length 1.87–2.4 mm (2.20 mm), width 22–25 (24). Cuticle smooth. Esophagus 98.0–135 (110) long. Nerve ring 88–104 (100) from anterior end. One testis directed anteriorly, not reflexed. Two spicules 54–73 (61) equal in length. Gubernaculum present, arcuate, sharply pointed, one-third as long as spicules. Two protuberances on the caudal end of the body. Terminal anus.


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