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Prevalence of *Parelaphostrongylus tenuis* in a Sample of Hunter-Harvested White-tailed Deer from a Tri-County Area in Northeastern Wisconsin

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ABSTRACT: Heads from 78 hunter-harvested white-tailed deer (*Odocoileus virginianus*) were donated for study during the 1985 Wisconsin gun hunting season. The intra-cranial nervous tissue was examined for *Parelaphostrongylus tenuis*. Prevalences were calculated for the total sample and for the portion of the sample which had no intra-cranial trauma. The prevalences thus calculated were 58% and 75%, respectively.

Key words: *Parelaphostrongylus tenuis*, white-tailed deer, *Odocoileus virginianus*, prevalence, Wisconsin.

Parelaphostrongylus tenuis is an endemic, relatively innocuous parasite of white-tailed deer (*Odocoileus virginianus*). The parasite is of veterinary importance because of its ability to cause neurologic disease in hoofed species other than white-tailed deer. This nematode infection is becoming increasingly significant in states such as Wisconsin where diverse agri-industry brings numerous susceptible species into contact with a large population of white-tailed deer.

The prevalence of *P. tenuis* infection of white-tailed deer in selected areas of Wisconsin has been reported by other authors. Samuel and Trainer (1969) using post-mortem and fecal analysis reported prevalences of 38% and 15%, respectively. Trainer (1973) reported a prevalence of 50% in a captive free-ranging herd of 600 animals in Vilas County, Wisconsin. Foreyt and Trainer (1980) surveyed deer herds in central and southern Wisconsin and found prevalences of 31% and 28%, respectively.

Seventy-eight specimens of white-tailed deer were collected at two hunter registration stations maintained by the Wisconsin Department of Natural Resources (Madison, Wisconsin 53706, USA). The

deer were harvested from Vilas, Oneida and Forest counties (45°30' to 46°10'N, 88°30' to 89°50'W). The animals' sex was determined, and the heads were disarticulated at the atlanto-occipital joint and stored at -17 C until dissections were performed. Frozen heads were sawn sagittally and allowed to thaw for 12 hr. The cerebral hemispheres were removed intact and the meningeal and dural surfaces were examined for parasites. The deer were aged using dental eruption and tooth wear criteria established by Severinghaus (1949).

Forty-five of 78 specimens harbored *P. tenuis* resulting in a prevalence of 58% (Table 1). Fifty-six of the specimens had no cranial trauma induced by gunshot or trophy collection; 44 (78%) of these were infected. Nematodes were found in only one of 22 damaged heads. The age range of the sample population was 0.5 to 8.5 yr (graded to 0.5 yr), the mean age was 1.9 yr (SD = 1.8). Sixty-five percent of the sample population was female. Chi-square analysis revealed no significant difference

TABLE 1. Specimen classification and the associated prevalences of *Parelaphostrongylus tenuis* in white-tailed deer harvested in northeastern Wisconsin during 1985.

| Classification | Number infected/ number examined | Prevalence (%) |
|-------------------------|--|-------------------|
| Total specimens | 45/78 | 58 |
| Untraumatized specimens | 44/56 | 78 |
| Traumatized specimens | 1/22 | 5 |
| Males | 13/27 | 48 |
| Females | 32/51 | 63 |
| ≤2 yr old | 33/55 | 60 |
| >2 yr old | 13/23 | 57 |

in the prevalences when animals were grouped by sex ($P > 0.5$) or by age (\leq and > 2 yr) ($P > 0.1$).

The prevalence of *Parelaphostrongylus tenuis* in free-ranging white-tailed deer reported here is significantly higher than that previously reported in Wisconsin. While reasons for this may include factors such as geographic differences in population densities of the definitive and intermediate hosts, it is more likely that differences in sampling technique were responsible. Direct identification of the adult parasites eliminates the inherent difficulties associated with the field collection of feces and the definitive identification of metastrongyloid larvae (Gray et al., 1985).

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