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STRONGYLOIDIASIS IN WHITE-TAILED DEER FAWNS IN FLORIDA^[1]

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Abstract: Six of 14 wild white-tailed deer fawns (*Odocoileus virginianus*) were found infected with a species of *Strongyloides*, probably *S. papillosus*. All positive fawns were obtained from northern Florida during March through June 1973, and were 1-3 weeks of age when first examined. Egg counts ranged from <50 to 2,050 eggs per gram of feces. This is the first report of this potentially pathogenic parasite in free-ranging white-tailed deer fawns.

INTRODUCTION

Forrester et al.¹ reported that 39% of 251 fawns born over a 10-year period in a closely confined captive herd of white-tailed deer in Florida, died with signs attributable to strongyloidosis. In contrast, the prevalence and pathologic impact of *Strongyloides* infections in native deer populations is unknown. This is probably because parasitologic studies have not been conducted on neonatal fawns, although it is notable that *Strongyloides* spp. have been reported from Columbian black-tailed deer (*Odocoileus hemionus columbianus*) in California² and from white-tailed deer in Texas.³ The latter report has been questioned, however, and may not be valid.⁴

The present paper reports the occurrence of *Strongyloides* infections in 1-3 week-old wild-caught white-tailed deer fawns from northern Florida.

MATERIALS AND METHODS

During March through June 1973, 14 white-tailed deer fawns varying in age from three to 90 days were hand-caught

by personnel of the Florida Game and Fresh Water Fish Commission in nine counties, seven of which were in northern Florida (Hamilton, Columbia, Nassau, Union, Clay, Dixie and Levy) and two in southern Florida (Sarasota and Broward). Shortly after capture the fawns were transported to Gainesville, Florida where they were maintained separately without contact with soil or other deer. Ages of the fawns were estimated by size and by the concentration of fetal hemoglobin in the blood using electrophoresis on urea starch gel to separate the hemoglobin chains.⁵ The fawns were given evaporated cow's milk from a bottle following the procedure outlined previously.¹

Within 1 week of capture fecal samples were obtained daily from each fawn on five to 13 occasions over periods of time varying from 1 to 5 weeks. One consistently negative fawn was sampled 25 times. Feces were examined for eggs of *Strongyloides* by the saturated salt flotation technique. Egg counts, determined by the McMaster technique, were obtained for many of the samples.

Three fawns were examined at necropsy following standard parasitologic

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techniques (using 100 mesh screens) to recover adult female *Strongyloides*. Adult worms were fixed in glacial acetic acid and preserved in 70% glycerinated ethyl alcohol. Temporary lacto-phenol mounts were prepared for microscopic studies and measurements were made with an ocular micrometer.

RESULTS AND DISCUSSION

Six of 14 fawns examined were found to be infected with *Strongyloides* (Table 1). Positive fawns were between 7 and 19

days of age when obtained from the wild and all were from counties in northern Florida. Most of these fawns had diarrhea, with fecal material occasionally flecked with blood, but this was seen infrequently in non-parasitized fawns also.

Egg counts on the positive fawns reached 2,050 eggs per gram of feces (Table 2) which is considerably lower than those reported by Forrester et al.¹ for pen-reared white-tailed deer in Florida, in which counts reached as high as 286,000.

TABLE 1. Results of examinations of native white-tailed deer fawns for *Strongyloides* infections in Florida during March-June 1973.

Estimated age of fawns when obtained (days)	Number of fawns examined	Number of fawns positive
3	1	0
7-11	7*	5
14-19	3	1
28-30	2	0
90	1**	0
Totals	14	6

* One fawn examined by fecal analysis and at necropsy; one fawn examined only at necropsy.

**Examined only at necropsy.

TABLE 2. Output of eggs of *Strongyloides* in feces of native white-tailed deer fawns in Florida.

Estimated age of fawn when obtained (days)	County	No. of daily fecal samples examined	Duration of sample time (days)	Range of egg counts (eggs/g feces)
7	Union	5	9	<50
7	Dixie	13	24	50-600
9	Levy	12	17	50-1,800
9	Levy	12	17	900-2,050
11*	Hamilton	7	12	<50
19	Nassau	7	12	100-900

* Examined at necropsy; two adult female *Strongyloides* recovered.

Parasitic female worms were recovered from one of three fawns examined at necropsy. This positive fawn had shed very few eggs in its feces and only two adult females were recovered from its intestine. Measurements compared closely with those published for *S. papillosus*.⁴

Since *Strongyloides* was believed to have been severely pathogenic to fawns in a captive herd,¹ this report of *Strongyloides* in six of 14 wild-caught fawns may have significance despite the fact that the infections were all mild. Any

ecological situation such as flooding, fire, or habitat destruction which leads to a high population density of deer has the potential to greatly intensify the degree of parasitism. Since *S. papillosus* is also found in sheep and other domestic animals which may share the same range, the total concentration of all susceptible animals must be considered in estimating the potential pathogenicity of this parasite. Further studies of free-living populations, particularly of very young animals, are needed before the full significance of this pathogen is understood.

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LITERATURE CITED

1. FORRESTER, D. J., W. J. TAYLOR and K. P. C. NAIR. 1974. Strongyloidosis in captive white-tailed deer. *J. Wildl. Dis.* 9: 11-17.
2. GLAZENER, W. C. and F. F. KNOWLTON. 1967. Some endoparasites found in Welder Refuge deer. *J. Wildl. Mgt.* 31: 595-597.
3. KITCHEN, H., F. W. PUTMAN and W. J. TAYLOR. 1967. Hemoglobin polymorphism in white-tailed deer: subunit basis. *Blood* 29: 867-877.
4. LEVINE, N. D. 1968. *Nematode Parasites of Domestic Animals and of Man*. Burgess Publishing Co., Minneapolis, Minnesota.
5. LONGHURST, W. M. and J. R. DOUGLAS. 1953. Parasite interrelationships of domestic sheep and Columbian black-tailed deer. *Trans. No. Amer. Wildl. Conf.* 18: 169-188.
6. SAMUEL, W. M. 1969. Parasites of the white-tailed deer in south Texas. Ph.D. dissertation. University of Wisconsin, Madison.

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