

HELMINTH PARASITES FROM ILLINOIS WILD TURKEYS

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Abstract: Viscera from 69 wild turkeys (Meleagris gallopavo silvestris) collected from Jackson, Union and Alexander counties, Illinois, were examined for helminth and coccidian parasites. Eight species of parasites were found, all in the alimentary tract. Nematode parasites Heterakis gallinarum, Ascaridia galli and Ascaridia dissimilis were found in 13.2%, 27.9% and 48.5% respectively of all birds examined. Infection rates of Ascaridia galli were higher in juveniles than in adults. Three species of cestodes, Raillietina williamsi, Metroliasthes lucida and Hymenolepis sp., were recovered from 41.1%, 27.9% and 1.4% respectively of the birds examined. Trematodes of the genus Cotylurus were recovered from 2.9% of the birds.

INTRODUCTION

Management of the wild turkey (Meleagris gallopavo silvestris) population in Illinois is dependent, in part, on understanding the role of parasitism as a limiting factor in these game birds. Wild turkeys have been reestablished at densities sufficient to support hunting in Illinois only since 1970 and little is known of their parasites. Surveys of parasites in wild turkeys have been made in several southeastern states (Prestwood 1968, Maxfield et al. 1963). Although these studies were primarily concerned with determining the kinds of parasites present and their geographic distribution, Prestwood et al. (1973) considered parasites and disease to be responsible for a large proportion of the 50-60% annual mortality not attributed to hunting. This is a report of a survey of parasites in Illinois turkeys which must be preliminary to determining the pathogenic effects of the parasites.

MATERIALS AND METHODS

Viscera of 69 male wild turkeys were collected at check stations

maintained by the Illinois Department of Conservation during the spring hunting seasons in 1972 and 1973. All birds brought to the check stations had been killed in Alexander, Jackson and Union counties. The age, weight and location of kill were recorded for each bird.

Viscera collected were examined immediately for parasites. The alimentary canals were opened and the contents flushed with water into white enamel pans and examined for parasites. Hearts and livers were opened with scissors and the tissue examined for parasites. Cestodes and nematodes were fixed in labeled vials of A.F.A. Fecal samples (1973 only) were collected from the lower alimentary region. Two grams of feces was placed in approximately 50 ml. of 2.5% potassium dichromate solution in labeled 1-pint plastic jars. The lids of the jars were not tightened so that sporulating oocysts present would be allowed air.

Nematodes were cleared with lacto-phenol on glass slides and identified. Confirmation of the identification of the nematodes was given by Dr. Ralph Lichtenfelds of the Animal Parasitology Institute, Agricultural Research Center, USDA, Beltsville, Maryland. Scoleces and proglottids of representative cestodes were fixed with acetocarmine, cleared, and mounted on glass slides. Identification of the cestodes was based on Williams (1931), Wardle and McLeod (1952) and Yamaguti (1961). Fecal samples for protozoan examination were kept for two weeks after collection at room temperature to permit sporulation. Oocysts were isolated from the feces by using a modified sugar floatation method (Cable 1966), and identified to family (Levine 1961).

## RESULTS

Seven species of helminth parasites were found in the lower alimentary tract of 69 turkeys examined in 1972 and 1973 (Table 1). No parasites were found in the esophagus, heart, liver or crop. Juvenile and adult infection rates are compared in Table 2.

Three species of nematodes were recovered from the birds. Heterakis gallinarum was removed from the ceca of nine of 68 turkeys. A range of one to 13 adult parasites was found in the birds with a mean of 6.6. In two birds, approximately 50 juveniles of H. gallinarum were found. Ascaridia galli was found in 19 out of 68 wild turkeys. Birds infected with A. galli harbored from one to 46 worms, with an average of 6.9. Ascaridia dissimilis was found in the intestine of 33 of 68 wild turkeys. A mean of 11.2 and a range of one to 40 parasites per bird was found. Three species of cestodes were found infecting Illinois wild turkeys. Raillietina williamsi and Metroliasthes lucida occurred frequently, 41% and 27.9% respectively. In some cases, combined infections were so heavy that the intestinal lumen appeared to be blocked. Several specimens of a third cestode, Hymenolepis sp., were found in a single adult turkey from Alexander County. Seven trematodes of the genus Cotylurus were recovered from the intestine of a turkey in 1972 and 10 were found in another bird

TABLE 1. Gastrointestinal parasites from wild turkeys shot in southern Illinois in 1972 and 1973.

Parasite	Alexander County		Jackson County		Union County		Total	
	No.	%	No.	%	No.	%	No.	%
	Examined	Positive	Examined	Positive	Examined	Positive	Examined	Positive
Nematoda								
<u>Heterakis gallinarum</u>	22	13.6	21	14.3	25	12.0	68	13.2
<u>Ascaridia galli</u>	22	40.9	21	23.8	25	20.0	68	27.9
<u>Ascaridia dissimilis</u>	22	63.6	21	52.3	25	32.0	68	48.5
Cestoda								
<u>Raillietina williamsi</u>	22	77.3	21	9.5	25	36.0	68	41.1
<u>Metroliasthes lucida</u>	22	18.1	21	14.3	25	48.0	68	27.9
<u>Hymenolepis sp.</u>	22	4.5	21	--	25	--	68	1.4
Trematoda								
<u>Cotylurus sp.</u>	22	--	21	9.5	25	--	68	2.9

TABLE 2. Percent adult and juvenile turkeys infected with gastrointestinal parasites in 1972 and 1973.

Parasite	Adults		Juveniles	
	No. Infected	% Positive	No. Infected	% Positive
Nematoda				
<u>Heterakis gallinarum</u>	6	13.0	3	13.6
<u>Ascaridia galli</u>	11	23.9	8	36.3
<u>Ascaridia dissimilis</u>	23	50.0	10	45.5
Cestoda				
<u>Raillietina williamsi</u>	18	39.1	10	45.4
<u>Metroliasthes lucida</u>	14	30.4	5	22.7
<u>Hymenolepis</u> sp.	1	2.1	--	--
Trematoda				
<u>Cotylurus</u> sp.	2	4.3	--	--

in 1973. Both turkeys were adults killed in Jackson County. Oocysts of Eimeria were recovered from feces of three of 31 (10%) turkeys.

#### DISCUSSION

Illinois wild turkeys had a lower rate of parasitic infections than reported for wild turkeys in other areas of the United States (Maxfield et al. 1963, Prestwood 1968). Illinois turkeys are well dispersed and densities may be lower than other populations studied. This factor would reduce the chance of food and water contamination by parasite ova passed in feces as well as reduce the chance of intermediate hosts of some parasites becoming infected. Other reasons for lower infections in Illinois birds may be due to climatic differences in the study areas, such as average annual temperature and amounts of rainfall. Ascaridia galli was the only parasite found more frequently in Illinois turkeys than in birds of other study areas. This nematode is common in domestic turkeys and chickens, and a high incidence of this parasite in wild turkeys may be attributed to domestic fowl contaminating parts of the turkey range with ova passed in feces.

Parasitic infections were similar in turkeys from the three Illinois counties except that trematodes were found only in Jackson County and the single Hymenolepis sp. found in Alexander County. The three counties are adjacent and the turkey population is essentially

continuous across them. Differences in parasite fauna in the birds are expected to be slight although minimal variations may exist due to local habitat variation or concentrations of reservoir hosts such as domestic fowl.

Cecal infections with Heterakis gallinarum totaled 13.2% of Illinois turkeys examined. This was a much lower rate than reported by Maxfield (62%) in 1963 and Prestwood (97%) in 1968. This parasite may be significant in turkey mortality because the protozoan Histomonas meleagridis, which is responsible for blackhead disease in turkeys, is transmitted from bird to bird through the ingested ova of this nematode (Prestwood et al. 1973). Blackhead could cause high mortality in the Illinois wild turkey population since the domestic chicken and bobwhite quail, common carriers of blackhead disease, share parts of the turkey range.

The pathogenicity of the other helminths found is relatively unknown. Some of these species found in large numbers can reduce the general health of the turkeys and cause weight loss (Wehr 1952). The nematodes A. galli and A. dissimilis and cestodes R. williamsi and M. lucida, which were found in large numbers, could be responsible for mortality if turkeys were stressed by severe weather.

We found distinctly higher infection rates in juveniles for only one of the seven helminth species recovered, Ascaridia galli. Infection rates were actually higher in adult birds for Ascaridia dissimilis, Metroliasthes lucida, Hymenolepis sp. and Cotylurus. It should be noted, however, that 68% of the birds examined were adults.

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