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HELMINTH PARASITES OF FISHER *Martes pennanti* (ERXLEBEN) FROM MANITOBA, CANADA

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Abstract: Seven species of helminths were recovered during a survey of 162 fisher *(Martes pennanti)* from four areas of Manitoba: *Baylisascaris devosi* in 52 fisher; *Taenia sibirica* in 25; *Physaloptera* sp. in nine; *Alaria mustelae* in two; *Metorchis conjunctus* in one; *Trichinella spiralis* in one of 81; *Molineus* sp. in one. *B. devosi* was the most prevalent parasite and differences in its geographical distribution were possibly related to population density of fisher. The prevalence of other parasites did not appear to be related to density of fisher.

INTRODUCTION

Few studies have been done on parasites of fisher and none on a fisher *(Martes pennanti)* population in the central to northern parts of its range. A few studies have incorporated parasite data in broader ecological and management studies.[3,5,6] A list of parasites from fisher collected in Maine,[7] and a new species of nematode, *Baylisascaris devosi,* from fisher and marten *(Martes americana)* have been described.[11] This study was undertaken to determine the parasites of fisher in Manitoba, their distribution in the province and parasite prevalence and intensity based on host age.

MATERIALS AND METHODS

One hundred and fifty-seven fisher were collected from four study areas: 105 from area A (50° 40′N; 95° 30′W); nine from area B (50° 0′N; 95° 10′W); 17 from area C (49° 20′N; 95° 30′W); 26 from area D (52° 30′N; 101° 30′W); one from the Berens River (52° 20′N; 97° 0′W), one from the Pigeon River (52° 10′N; 97° 0′W) and three from the Thompson area (55° 45′N; 97° 50′W). Carcasses, frozen from one to ten months, were obtained from trappers and the Manitoba Wildlife Branch. Five specimens were fresh. Carcasses were thawed at room temperature and the entire gastrointestinal tract, lungs and heart were removed for examination.

The gastrointestinal tract was divided into three major sections: esophagus-stomach, small intestine (separated into four sections), and large intestine. The mucosa was scraped off each section, stirred in a tray and the suspended material examined and then decanted. Parasites were removed, fixed in FAA and stored in 70% ethanol. Nematodes were cleared in lactophenol and *en face* preparations made. Cestodes and trematodes were stained with aceto-carmine.

Adult fisher were distinguished from juveniles by the presence of open sutures in the skulls of fisher under one year old.[15]

RESULTS

Results are summarized in Table 1. Helminths were recovered from 52 of 162 animals examined. Only *T. sibirica* recovered from 19 females and 6 males showed a significant difference ($p < 0.01$) in prevalence between sexes. Juveniles had higher prevalences of *B. devosi* and *Physaloptera* sp.: 36.0% had *B. devosi* compared to 18.9% of adults; 6.4% had *Physaloptera* sp. compared to 2.7% of adults. There was not a significant

TABLE 1. Prevalence and intensity of gastrointestinal parasites of 162 fisher from Manitoba, Canada (1975-77).

Parasite	NMCIC(P)[1]	Prevalence of Infection			Intensity[4]
		Total Sample	Juveniles	Adults	
Baylisascaris devosi Sprent (1952)	1979-234	32.0	36.0	18.9	2.17±1.68
Taenia sibirica Dubnitzky (1952)	1979-235	15.4	16.0	13.5	1.84±1.31
Physaloptera sp.	1979-236	5.6	6.4	2.7	1.44±1.01
Alaria mustelae Bosma (1934)	1979-238	1.2	1.6	2.7	55.00±18.03
Metorchis conjunctus[2] (Cobbold, 1860) Looss, 1899	1979-237	0.6	—	—	25
Trichinella spiralis[3] (Owen, 1835) Raillet, 1895		1.2	—	—	1
Molineus sp.[2]		0.6	—	—	1

[1]Accession number to National Museum of Canada Invertebrate Collection (Parasites).
[2]one specimen infected
[3]one infection in 81 examined
[4]mean ± SD

difference between prevalences of *T. sibirica* in juvenile and adult fisher.

Prevalence of parasites in fisher varied between sample areas: 44.8% of the fisher population from area A was infected with *B. devosi* and 18.1% infected with *T. sibirica*. Prevalence values for *B. devosi* in areas B, C, and D were 11.1, 5.9, and 11.7, respectively. Prevalence values for *T. sibirica* in areas B, C, and D were 0, 11.7, and 15.4, respectively. Significant differences ($p < 0.01$) in levels of parasitism were found between areas for *B. devosi* but not for *T. sibirica*.

DISCUSSION

Low numbers of species recorded and low prevalence values are similar to other studies.[3,5,6] This study, like that of De Vos,[5] found *B. devosi* in fisher. Recently, *B. devosi* had been found in fisher in New Brunswick (C. Bursey, pers. comm.) thus indicating a much wider geographical distribution for this nematode than previously known.

Although *P. maxillaris* has been reported from fisher,[6] recent experimental evidence indicated a high degree of host specificity for this species in skunks.[2] We have identified specimens from fisher as *Physaloptera* sp.; however, arrangement of anal papillae on the only male specimen recovered does not fit published descriptions for *Physaloptera* spp.[9]

The prevalence and intensity of *Physaloptera* sp. are low suggesting that intermediate or paratenic hosts are not eaten frequently.

T. sibirica in fisher is a new host and North American record. Our identification of *T. sibirica*, based on shape, size and number of hooks has been verified by C. Bursey (pers. comm.) and compared to

indistinguishable specimens obtained from fisher in New Brunswick. The life cycle of *T. sibirica* is not known but since squirrels are a major food item of fisher they are a potential intermediate host.[10] Tapeworms found in other studies[3,5,6,7] were identified as *Mesocestoides variabilis,* although a *Taenia* sp. was mentioned in one study.[3]

Alaria sp. has been reported from fisher.[3,8] Our findings extend the geographical range of *Alaria* in fisher. This is the first report of *M. conjunctus* from fisher and the first report in Manitoba east of Lake Winnipeg. Although fisher are reported to eat fish,[1,10] no fish were recovered from stomach samples examined in this study.

T. spiralis has been reported from fisher from the Rocky Mountain Region of the United States.[14] Our observation extends the range of *T. spiralis* in wild carnivores into Southern Manitoba. Since the one infected fisher was trapped in cottage country the infection may be due to scavenging around dumps.

The absence of lungworms, kidney worms and guinea worm from fisher in Manitoba is of interest. Lungworms were recorded in fisher collected from Ontario,[4] and *Dracunculus insignis* from fisher in New York State.[15] *Dioctophyma renale* has been reported in fisher from Ontario[13] and from Maine.[3] Furthermore, in area A, where most fisher were trapped, *D. renale* was recovered from a wolf and mink. Examination of fisher stomachs from Manitoba by R. Leonard revealed a high proportion of their diet was mammals and birds. No fish, amphibians or reptiles were recovered suggesting that these animals were not plentiful or that fisher did not frequent aquatic habitats.

The geographical differences noted in the prevalence of *B. devosi* may be related to current population densities (based on trapping records) and the absence of fisher from areas for an extended time (R. Stardom, pers. comm.). Area A has always had fisher in moderate numbers. In contrast, fisher numbers in area B (Whiteshell Park) have been reduced by trapping and destruction of habitat, and extirpated from area C in the past 30-40 years due to agriculture, logging and trapping. In the last 10 years fisher have returned and are increasing in numbers in areas B and C. Fisher were reduced to very low numbers in area D through intensive trapping and logging operations, but have started to increase in the last 5-10 years. *B. devosi* requires a small rodent to complete its life cycle.[12] Consequently, the absence of fisher from an area, or very low populations of fisher, could reduce the prevalence to a negligible value, especially since wolverines *(Gulo gulo)* have been absent from these areas for 100 years and marten are rarely trapped (R. Stardom, pers. comm.). With increasing numbers of fisher in areas B, C and D we predict an increase in the prevalence of *B. devosi* in these fisher populations. *T. sibirica* did not show obvious geographical differences in levels of infection, thus it appears that its prevalence in fisher populations may be independent of fisher density.

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