

HELMINTHS OF THE BLACK BEAR IN QUEBEC

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Abstract: Twenty-one complete carcasses of black bears, *Ursus americanus*, together with 34 intestinal tracts, 86 diaphragms and 168 faecal droppings collected between June, 1971 and November, 1972 in the Province of Quebec were examined for helminths. Species found and their prevalence were as follows: *Dirofilaria ursi* in 57%; *Uncinaria yukonensis* in 6%; *Baylisascaris transfuga* in 21%; larvae of *Trichinella spiralis* in less than 1%; *Diphyllobothrium ursi* in 36%; and *Taenia krabbei* and *Taenia hydatigena* in 4%. These findings are discussed in the light of other reports.

INTRODUCTION

Hunting black bears, *Ursus americanus*, for meat and sport has become popular in Eastern Canada. With this comes a growing concern about their parasites. The present paper is a survey of the helminth parasites of black bears in the Province of Quebec.

MATERIALS AND METHODS

Twenty-one intact carcasses and the intestinal tracts of 34 additional black bears killed in or near Quebec parks between June, 1971 and November, 1972 were examined for helminth parasites. In addition, 86 diaphragms were searched for larvae of *Trichinella spiralis* following artificial digestion, and a total of 202 faecal samples was examined for helminth ova following flotation with saturated sodium nitrate (NaNO₃).

RESULTS

All 21 bears, ranging in age from 18 months to 10 years harboured helminth parasites. *Dirofilaria ursi* (syn. *D. des-*

portesii) in 12 (57%) of the 21 bears; *Diphyllobothrium ursi* in 11 (52%) and *Baylisascaris transfuga* in 2 (10%). Most of the specimens of *Dirofilaria ursi* were found in the superficial abdominal fascia and in the adipose tissue of the inguinal region; *Diphyllobothrium ursi* (1 to 15 worms) and *B. transfuga* (12 and 15 worms) were found in the intestinal tract. Nine of the 21 bears (43%) had single infections with *Dirofilaria ursi*, 8 bears (38%) were infected with *Diphyllobothrium ursi* only, while a *B. transfuga* infection alone was encountered only once (5%). Only two double infections (*Dirofilaria ursi* and *Diphyllobothrium ursi*), and a single triple infection (*Dirofilaria ursi*, *Diphyllobothrium ursi*, and *B. transfuga*) were found. *T. spiralis* larvae were not found in the diaphragms of these 21 carcasses. Indeed, of the 86 additional diaphragms examined, only one (1%) was infected.

Examination of an additional 34 intestinal tracts of black bear yielded six *B. transfuga* infections (18%) as well

□ Specimens were identified by Dr. R. L. Rausch, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

as an additional three species of helminths: *Uncinaria yukonensis* in 2 (6%); *Taenia hydatigena* in 2 (6%); and *Taenia krabbei* in 1 (3%). An examination of rectal faeces from gastrointestinal tracts obtained from infected bears revealed large numbers of the characteristic hookworm, ascarid and taeniid eggs. No eggs or adults of *Diphyllobothrium ursi* were found in any of these 34 intestinal tracts.

Examination of 168 faecal samples collected in Quebec parks revealed diphylobothriid eggs, 69 (41%); ascarid eggs (probably *B. transfuga*, 38 (23%); hookworm eggs (probably *U. yukonensis*, 11 (7%) and contained taeniid eggs (probably *T. krabbei* and/or *T. hydatigena*), 5 (3%).

DISCUSSION

Based on materials examined, over-all rates of infection in black bears in Quebec were as follows: *Dirofilaria ursi*, 57%; *U. yukonensis*, 6%; *B. transfuga*, 21%; *T. krabbei* and *T. hydatigena*, 4%; and *Diphyllobothrium ursi*, 36%.

Dirofilaria ursi

D. ursi was the most common helminth of black bears in Quebec.

D. ursi originally was described from *U. torquatus japonicus* in Japan⁹ and seems to be the only species of the genus to parasitize bears. Anderson¹ redescribed *D. ursi* and Choquette² described *D. desportesi* from the black bear in eastern Canada. The two species are now considered synonymous.³ *D. ursi* is found in bears throughout the northern United States and Canada.⁷

Diphyllobothrium ursi

Adults of *D. ursi* were first described from the brown bear, *U. arctos middendorffi* Merriam and plerocercoids from the sockeye salmon, *Oncorhynchus nerka*, on Kodiak Island, in the Gulf of Alaska by Rausch.⁵ Cestodes morphologically identical with those taken from

bears on Kodiak Island developed when plerocercoids were fed to captive black bears.⁵ In a recent survey of parasites of black bears from northeastern Minnesota or northern Michigan, Rogers⁷ reported the absence of *Diphyllobothrium*. In the present study *D. ursi* occurred in 36% of black bears. The intermediate host in Quebec is not known.

Baylisascaris transfuga

This parasite is found throughout the range of the black bear in Canada and the northern United States. Rogers⁷ reported that of seven intestinal tracts examined in Minnesota, five contained one to four *B. transfuga*. In the present study only 21% of black bears were infected or showed evidence of this parasite, but as many as 15 worms were found in one bear.

Uncinaria yukonensis

(syn. *Dochmoides yukonensis*)

Uncinaria yukonensis has been reported from black bear in the Yukon Territory by Wolfgang.⁸ Rogers,⁷ on the other hand, did not encounter this parasite in northeastern Minnesota or northern Michigan. According to our data, *U. yukonensis* occurred in 6% of Quebec bears.

Taenia krabbei and *T. hydatigena*

Taenia krabbei and *T. hydatigena* have been reared experimentally in young black bears,^{5,6} and *T. krabbei* was recorded from naturally infected *U. arctos* by Choquette *et al.*³ In the present study these cestodes occur in about 4% of the bear population sampled. It is conceivable that black bears acquire the infections by feeding on the carcasses of moose. In North America, *T. krabbei* and *T. hydatigena* in their adult stage are primarily parasites of wolves. It would seem unlikely that bears play a significant role in the epizootiology of these parasites.

Trichinella spiralis

Zimmerman, in a personal communication to Rogers⁷ reported that *T. spiralis* was found in 6 (3.8%) of 163 diaphragms of black bears in northern Wisconsin, demonstrating the presence of ursine trichinellosis in the Lake Su-

perior Region. In 1968-69 a survey in the northeastern United States showed that in 372 black bears infection rates ranged between 0.15 and 2.5 per cent.⁴ In the present study, larvae of *T. spiralis* were found in only one of 107 samples of diaphragm examined.

Acknowledgements

The collaboration of the Quebec Department of Tourism, Fish and Game who provided the facilities for this study is acknowledged. Thanks are also extended to Messrs. F. Goudreault, F. Guibert, I. Juniper, R. Lemire, C. Bernard, J. P. Blais, R. Sequin, biologists, and to Mr. Normand Dionne, Superintendent of La Verendrye Park. Research at the Institute of Parasitology is supported by the National Research Council of Canada and the Formation de Chercheurs et d'Action Concertée du Ministère de l'Éducation du Québec.

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Received for publication 28 March 1977