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Authors: Foreyt, William J., High, William A., and Green, Richard L.

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Search for the Trematode *Prouterina wescotti* in Black Bears in Oregon

William J. Foreyt,[1,4] **William A. High,**[2] **and Richard L. Green**[3] [1] Department of Veterinary Microbiology and Pathology, Washington State University, Pullman, Washington 99164, USA; [2] Oregon Department of Fish and Wildlife, 4412 NE Silverton Road, Salem, Oregon 97305, USA; [3] Oregon Department of FIsh and Wildlife, 7118 NE Vandenberg Ave., Corvallis, Oregon 97330, USA; [4] Corresponding author (e-mail: wforeyt@vetmed.wsu.edu).

ABSTRACT: Forty-six heads of free-ranging black bears (*Ursus americanus*) collected in May and June of 1995 and 1996 from Oregon (USA) were examined for the trematode *Prouterina wescotti* and other parasites. Only *Sarcocystis* sp. was detected in two adult male bears. *Prouterina wescotti* has been found only once previously in one black bear from Idaho (USA); its normal definitive host remains unknown.

Key words: Black bear, *Prouterina wescotti, Sarcocystis* sp., survey, trematode, *Ursus americanus.*

The heads of 46 black bears (*Ursus americanus*) from Oregon were examined for parasites, with primary emphasis on *Prouterina wescotti*, a trematode that has been found only once previously in one bear from Idaho (Foreyt et al., 1996). The bears included 37 males (ages 1 to 14 yr, $\bar{x}$ = 4.0) and 9 females (ages 1 to 11 yr, $\bar{x}$ = 4.1). Bears were collected in May and June of 1995 and 1996 from Linn (n = 26), Lane (n = 13), and Marion (n = 4) Counties in western Oregon (USA; 43°60′ to 45°5′N, 121°45′ to 122°55′W), and from Umatilla County (n = 3) in northeastern Oregon (45°5′ to 45°40′N, 118°5′ to 119°29′W). Bears were killed by state or federal animal damage control personnel because of damage problems. Only the complete frozen heads were submitted to the Washington Animal Disease Diagnostic Laboratory (Pullman, Washington, USA) for analysis. Each bear had been tagged with a collection number, location of capture, and sex. Ages of most bears were determined by the tooth eruption (Marks and Erickson, 1966) and the cementum annuli techniques (Willey, 1974).

Heads were thawed, skinned, and then cut in half longitudinally on a large band saw. Pieces of masseter muscle, esophagus, tongue and brain were removed, fixed in 10% buffered formalin, sectioned at 5 μm, and stained with hematoxylin and eosin for microscopic evaluation. Tissues for examination were approximately 1.5 cm^2 and the entire stained tissue on the slide was examined at 100×. The nasal sinuses were examined grossly for trematodes, and then flushed with approximately 4 L of water under pressure from a hose. All water and material flushed from the nasal sinuses were collected in a large dish pan, concentrated by decanting the supernatant, and placing the sediment in a 500 ml bottle. After decanting the additional supernatant, all sediment was examined under a dissecting microscope at 30× for trematodes and their eggs.

Parasites were not observed grossly in the nasal sinuses, and parasites or eggs were not collected from nasal sinus washings. Histologically, metazoan parasites were not detected in brain, esophagus, or masseter muscle, but *Sarcocystis* sp. was detected in the tongues of two bears, a 2-yr-old male from Linn County and a 3-yr-old male from Umatilla County. A total of two sarcocysts were observed, and these were 240 × 60 μm and 84 × 60 μm, respectively. The cyst wall of one sarcocyst was studied by transmission electron microscopy (Hitachi H600, Hitachi, Santa Clara, California, USA). The thin undulating cyst wall was approximately 0.9 μm in width, which is less than the unidentified sarcocyst in a bear described by Dubey et al. (1998), which had a cyst wall thickness of <2 μm. The sarcocyst we detected is likely a different species. Further characterization of these parasites is necessary before the species can be fully identified.

Based on this survey of 46 bears, *P. wescotti* was not detected. There are several studies on the external and gastrointestinal parasites of bears (see Forrester, 1992), but the specific purpose of this study was to survey for *P. wescotti* and other parasites that might be detected in the heads of bears. *Prouterina wescotti* has been reported from only one black bear in Idaho that was emaciated, weak and had a nasal discharge (Foreyt et al., 1996). Based on that one report, it could not be determined whether the bear is the normal definitive host or an aberrant host of this trematode. The present study indicated that *P. wescotti* is not a common parasite in the Oregon bear population, and further studies in different regions of the world will determine the true prevalence of the trematode in black bears. Additional studies in other animals will also determine whether another definitive host is the normal host for this parasite. *Sarcocystis* sp. in muscles has been reported previously in 6 of 53 black bears from the southeastern USA (Crum et al., 1978), and in 1 of 92 black bears from North Carolina (Dubey et al., 1998). The species of *Sarcocystis* in bears has not been identified, but Dubey et al. (1998) indicated the *Sarcocystis* sp. from the bear in North Carolina was different from other known species of *Sarcocystis.* Cases of fatal hepatic sarcocystosis in black bear (Zeman et al., 1993) and in two polar bears (Garner et al., 1997) have been attributed to a *Sarcocystis*-like parasite, but muscular sarcocysts were not observed in those animals. Our survey confirms the previous study indicating a low prevalence of *Sarcocystis* spp. in bears. The definitive host of *Sarcocystis* sp. in bears has not been identified.

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