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Gary A. Heidt

University of Arkansas at Little Rock

Ann H. Nichols

University of Arkansas at Little Rock

James J. Daly

University of Arkansas for Medical Sciences

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Arkansas Academy of Science

INCIDENCE OF *GIARDIA* IN ARKANSAS BEAVER

Over the past several years, human giardiasis has been recognized as an important parasitic disease (e.g. Barbour et al., 1976; Davies and Hibler, 1979; Lopez et al., 1980; and Gerardi, 1982). While the disease may be transmitted by the fecal-oral route, an increase in waterborne transmission has been noted (Gerardi, 1982). Several wildlife species (e.g. beaver, dogs, rats, raccoons) have been shown to have cross-infectivity with humans, thus transmission of *Giardia* through water contamination can occur through a number of reservoirs (Davies and Hibler, 1979; Hewlett et al., 1982). Because of their aquatic habits, the beaver would seem to be most highly suspect in waterborne cases of giardiasis. This study was undertaken to survey beaver in Arkansas to determine if *Giardia* was present and if any geographical region in the state might be more prone to infected animals.

During the 1983-84 furbearer trapping season, several Arkansas trappers were solicited to collect feces from the rectum of freshly killed beaver and place it in two specially prepared containers, one containing 10% formalin and the other a polyvinyl alcohol fixative solution. Detailed instructions were included with the specimen packs. The specimens were returned to the Dept. of Biology at UALR for subsequent analysis at the UAMSC.

Concentration procedures were performed, on the formalin samples, using the formalin-ethyl acetate sedimentation technique (modified Ritchie's ether-formalin procedure; Young et al., 1979). Wet preparations stained with Lugol's Iodine were examined for the presence of *Giardia* cysts. When necessary, for confirmation or identification, samples preserved in polyvinyl alcohol fixative were stained, using Wheatley's (1951) trichrome stain.

Table 1 summarizes the findings of *Giardia* cysts in the feces examined. Feces from 78 beaver were examined, 9 of which were positive, resulting in a prevalence of 11.5%. This prevalence is much higher than that found by Wallis et al. (1984) 3.5% - 2/58 beavers) in Alberta, Canada and lower than that found by Davies and Hibler (1979) (18%) in a Colorado study. However, it is similar to a study of 656 beavers in Washington, which exhibited a prevalence of 10.5% (Frost et al., 1982). These studies, together with others directly linking beaver to waterborne giardiasis (Barbour et al., 1976; Dykes et al., 1980; and Lopez et al., 1980) demonstrate that the beaver may be an important reservoir for *Giardia*.

Specimens in this study were obtained from 13 counties throughout the state (Table 1). Of these, infected beavers were found in six counties (46.2%). Counties with infected beavers were located throughout the state, with no discernable pattern.

The results reported suggest that beaver in Arkansas exhibit a relatively high prevalence of *Giardia* and that they might serve as an important reservoir for waterborne transmission of giardiasis between wildlife and man. The data certainly indicate that further study on *Giardia* in beaver, as well as other wildlife, in Arkansas is warranted.

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Table 1. Incidence of *Giardia* in a survey of Arkansas beaver.

County	Specimens Examined	Specimens Infected
Bradley	9	1
Clark	4	0
Dallas	3	0
Faulkner	7	0
Grant	6	0
Hot Spring	3	1
Independence	1	1
Lawrence	2	0
Lonoke	1	0
Perry	6	1
Pulaski	8	2
Scott	26	3
Sharp	2	0
Total	78	9

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GARY A. HEIDT and ANN H. NICHOLS, Dept. of Biology, University of Arkansas at Little Rock, Little Rock, AR 72204, and JAMES J. DALY, Dept. of Microbiology and Immunology, University of Arkansas for Medical Sciences, Little Rock, AR 72205.