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First Report of Immature *Thelazia skrjabini* (Nematoda: Thelazioidea) from the Eye of a White-tailed Deer, *Odocoileus virginianus*

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ABSTRACT: The eyes from 103 hunter-killed white-tailed deer (*Odocoileus virginianus*), and 19 mule deer (*O. hemionus*) killed between 28 November to 14 December 1991 from Wainwright, Alberta were examined for *Thelazia* spp. One immature male and two immature female *Thelazia skrjabini* were collected from beneath the third eyelid of one adult female *O. virginianus*. This is the first report of *T. skrjabini* in a member of the Cervidae.

Key words: *Thelazia skrjabini*, *Odocoileus hemionus*, *Odocoileus virginianus*, Alberta, eyeworms.

There are few published reports of eyeworms from deer in North America. Oberhansley (1940) and Herman (1944) collected *Thelazia californiensis* from black-tailed deer, *Odocoileus hemionus columbianus* in California (USA). Parmelee et al. (1956) reported it from several hosts, including deer (*Cervus* spp.), from California. Schad and Raught (1958) extended the known range of *T. californiensis* in mule deer (*O. hemionus*) to include New Mexico (USA), and Beitel et al. (1974) reported the same species in *O. h. columbianus* in northwestern Oregon (USA). Weinmann et al. (1974) noted that *T. californiensis* was the only native eyeworm of mammals in North America. Interspecific cross-transmission from deer to other mammals has been reported for *T. californiensis*, including dogs, cats, sheep, horses and humans. Wildlife such as deer (*Cervus* spp.), jackrabbits (*Lepus townsendii*), and coyotes (*Canis latrans*) also are reported as occasional hosts for *T. californiensis* (Parmelee et al. 1956; Weinmann et al., 1974). *Thelazia skrjabini*, an eyeworm of cattle, was likely introduced into North America with its vector, *Musca autumnalis* in 1952 (Vockeroth, 1953) and

is now widespread. To my knowledge, *T. skrjabini* has not been reported from any member of the family Cervidae. The lack of reports of *Thelazia* spp. in deer may be attributed to the fact that deer generally are not examined for eyeworms unless conjunctivitis is present.

In the Wainwright area (approximately 596 km²), Alberta, Canada, about 3,000 white-tailed deer (*O. virginianus*) and 500 mule deer often browse pastures used by approximately 7,500 beef cattle. Five-to-ten percent of these cattle are infected with *T. skrjabini*. There existed a potential for deer to become infected with two species: *T. skrjabini*, and *T. gulosa* which normally is found in cattle (M. J. Kennedy, unpubl.). From 28 November to 14 December 1991, the heads from 122 deer were collected from hunter-killed animals in the Wainwright area (52°45'N, 110°06'W) (Table 1). The heads were removed and frozen in the field, then shipped to the Provincial Veterinary Laboratory, Edmonton, Alberta. The heads were thawed in the laboratory; the eyes were removed and examined using the method of Kennedy and Moraiko (1987).

Thelazia skrjabini was found in only one of 122 deer examined. Two immature females and one immature male were recovered from beneath the third eyelid of the left eye of a white-tailed deer. The three specimens were deposited in the Canadian Museum of Nature Parasite Collection, Ottawa, Ontario, Canada K1P 6P4 (Accession number CPNP1992-0015). *Thelazia skrjabini* normally is found within the lacrimal ducts of the third eyelid in cattle; less frequently it is found free be-

TABLE 1. Age distribution of 122 deer, *Odocoileus* spp., examined for *Thelazia* spp. from Wainwright, Alberta.

| Species | Host sex | | | | | | Total |
|-----------------------|----------|------|----------|--------|------|----------|-------|
| | Male | | | Female | | | |
| | Adult | Fawn | Yearling | Adult | Fawn | Yearling | |
| <i>O. virginianus</i> | 1 | 7 | 8 | 60 | 19 | 8 | 103 |
| <i>O. hemionus</i> | 4 | 0 | 6 | 5 | 4 | 0 | 19 |

neath the third eyelid or in lacrimal ducts leading from the orbital lacrimal gland opening into the conjunctiva near the fornix (Patton and Marbury, 1978; M. J. Kennedy, unpubl.). In our study, worm position may have resulted from the nematodes being unable to enter the numerous smaller ducts present under the third eyelid of deer compared to the two-to-three larger ducts found in cattle. *Thelazia skrjabini*, common in cattle in Alberta (Kennedy et al., 1990), is occasionally reported from other mammals including horses in the United States (Lyons et al., 1976), and buffalo in India (Pande et al., 1970; Chauhan and Pande, 1973). Mule deer in California frequently are reported to harbor *T. californiensis*, and wapiti (*Cervus elaphus*) have been reported to be infected with *T. rhodesii* in Romania (Almasan and Nesterov, 1961) and the U.S.S.R. (Tretyakova, 1964). Both nematodes normally develop beneath the third eyelid and less frequently enter the ducts of their host.

LITERATURE CITED

- ALMASAN, H., AND V. NESTEROV. 1961. Prezentia *Thelazia rhodesii* la cerb (*Cervus elaphus* L.) in R.P.R. Natura (Bucharest) Series on Biology 13: 64-65.
- BEITEL, R. J., S. E. KNAPP, AND P. A. VOHS, JR. 1974. Prevalence of eyeworm in three populations of Columbian black-tailed deer in northwest Oregon. The Journal of Parasitology 60: 972-975.
- CHAUHAN, P. P. S., AND B. P. PANDE. 1973. Observations on the incidence of *Thelazia* infection in cattle and buffaloes in Uttar Pradesh with remarks on its significance. Indian Journal of Animal Science 43: 300-305.
- HERMAN, C. M. 1944. Eyeworm (*Thelazia californiensis*) infection in deer in California. California Fish and Game 30: 58-60.
- KENNEDY, M. J., AND D. T. MORAİKO. 1987. The eyeworm, *Thelazia skrjabini*, in cattle in Canada. Canadian Veterinary Journal 28: 254-255.
- KENNEDY, M. J., D. T. MORAİKO, AND L. GOONEWARDENE. 1990. A study on the prevalence and intensity of occurrence of *Thelazia skrjabini* (Nematoda: Thelazioidea) in cattle in central Alberta, Canada. The Journal of Parasitology 76: 196-200.
- LYONS, E. T., J. H. DRUDGE, AND S. C. TOLLIVER. 1976. *Thelazia lacrymalis* in horses in Kentucky and observations on the face fly (*Musca autumnalis*) as a probable intermediate host. The Journal of Parasitology 62: 877-880.
- OBERHANSLEY, F. R. 1940. California mule deer a host for nematode eye worms in Sequoia National Park. Journal of the American Veterinary Medical Association 96: 542.
- PANDE, B. P., P. P. S. CHAUHAN, B. B. BHATIA, AND G. S. ARORA. 1970. Studies on bubaline eyeworms with reference to the species composition of *Thelazia* and their pathogenic significance. Indian Journal of Animal Science 40: 330-345.
- PARMELEE, W. E., R. D. LEE, E. D. WAGNER, AND H. S. BURNETT. 1956. A survey of *Thelazia californiensis*, a mammalian eyeworm, with new locality records. Journal of the American Veterinary Medical Association 129: 325-327.
- PATTON, S., AND K. MARBURY. 1978. Thelaziasis in cattle and horses in the United States. The Journal of Parasitology 64: 1147-1148.
- SCHAD, G. A., AND R. W. RAUGHT. 1958. *Thelazia californiensis* from a mule deer, *Odocoileus hemionus cooki* (Mearns, 1879), in New Mexico. The Journal of Parasitology 44: 483.
- TRETYAKOVA, O. N. 1964. Occurrence of *Thelazia rhodesii* (Desmarest, 1827) in elk. [In Russian.] Materialy Nauchroi Konferentsii Vsesoyuznogo Obschestva Gel'mintologov (Part II), pp. 198-200.
- VOCKEROTH, J. R. 1953. *Musca autumnalis* Deg. in North America (Diptera: Muscidae). The Canadian Entomologist 85: 422-423.
- WEINMANN, C. J., J. R. ANDERSON, P. RUBTZOFF, G. CONNOLLY, AND W. M. LONGHURST. 1974. Eyeworms and face flies in California. California Agriculture 28: 4-5.

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