

Research Note

Endoparasites of the White-tailed Prairie Dog, *Cynomys leucurus*, at Meeteetse, Park County, Wyoming¹

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ABSTRACT: Endoparasites of 8 species were recovered from 17 white-tailed prairie dogs, *Cynomys leucurus*, examined from colonies near Meeteetse, Wyoming in 1986, viz., 4 protozoans: *Eimeria cynomysis*, *E. larimerensis*, *E. ludoviciani*, and *Sarcocystis* sp.; 2 species of cestodes: *Hymenolepis citelli* and *Taenia mustelae*; and 2 nematodes: *Physaloptera* sp. and *Capillaria* sp. Six of these parasites are reported here for the first time from this host with only *E. larimerensis* and *E. ludoviciani* previously known from white-tailed prairie dogs.

KEY WORDS: *Cynomys leucurus*, white-tailed prairie dog, endoparasites, survey, Protozoa, Nematoda, Cestoda.

Few reports concerning parasites of the white-tailed prairie dog (*Cynomys leucurus* Merriam) exist in the literature. The purpose of this paper is to report results of an investigation of the endoparasites of white-tailed prairie dogs from northwestern Wyoming. Interest in this particular population of prairie dogs was stimulated by the discovery of the endangered black-footed ferret (*Mustela nigripes* Audubon and Bachman) in this area in 1981. Prairie dogs are the primary prey of black-footed ferrets (Sheets et al., 1972).

Seventeen prairie dogs were live trapped near Meeteetse (44°0.5'–44°15'N, 108°55'–109°15'W) from a population comprised of 33 colonies covering approximately 30,000 ha. These animals were transported to the Wyoming State Veterinary Laboratory, Laramie, Wyoming, where they were held for 3–4 days on a diet of laboratory rodent chow and carrots prior to necropsy. Fecal samples and tissues from stomach, intestine, liver, and muscle were collected and examined for parasites.

For identification of the coccidian oocysts, fecal specimens were stored at room temperature (approximately 25°C) for 2–3 wk in 2% potassium dichromate to allow oocyst sporulation. Fe-

cal floatations using Benbrook's sugar solution (specific gravity = 1.2) were performed to concentrate oocysts. Striated muscle from the lumbar and caudal thigh regions and a variety of other tissues were fixed in 10% buffered formalin, embedded in paraffin, and sectioned at 6 µm for examination by light microscopy. Stomach and intestines were opened longitudinally and the contents scraped into finger bowls and washed several times with tap water. The material was then poured into petri dishes and examined under a dissecting microscope (12×) for helminths. Cestodes were relaxed and killed in hot 10% formalin and later stained with Ehrlich's hematoxylin and mounted on slides for identification. Nematodes were relaxed and killed in hot 70% EtOH plus 5% glycerol and later cleared in lactophenol for identification. Livers containing cystlike structures were dissected and examined for parasites. Hook mounts of cysticerci were prepared in Hoyer's medium for examination and identification.

Four protozoan, 2 cestode, and 2 nematode species were found infecting white-tailed prairie dogs in this study. A list of species and their distribution by age class and sex are shown in Table 1. For ease of comprehension each species will be considered separately.

Voucher specimens of the following helminths have been deposited in the USNM Helminthological Collection under the following accession numbers: *Physaloptera* sp. (80540), *Capillaria* sp. (80541), *Taenia mustelae* (80542), and *Hymenolepis citelli* (80543).

Eimeria cynomysis Andrews, 1928, was first reported infecting prairie dogs by Andrews (1928), but he did not specify what species of prairie dogs he had examined. Vetterling (1964) reported and redescribed *E. cynomysis* from black-tailed prairie dogs (*Cynomys ludoviciani* Ord) from northern Colorado. This is the first report of *E. cynomysis* infecting white-tailed prairie dogs.

Eimeria larimerensis Vetterling, 1964, was re-

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Table 1. Results of survey for endoparasites of white-tailed prairie dogs, *Cynomys leucurus*, near Meeteetse, Wyoming.

Species of parasite	Adult (N = 4)		Juvenile (N = 13)		Total infected/ prevalence*
	Male	Female	Male	Female	
<i>Eimeria cynomysis</i>	0	0	1	3	4/23.5%
<i>E. larimerensis</i>	0	0	1	3	4/23.5%
<i>E. ludoviciani</i>	1	1	3	6	11/64.7%
<i>Sarcocystis</i> sp.	1	1	0	0	2/11.8%
<i>Hymenolepis citelli</i>	2	1	1	0	4/23.5%
<i>Taenia mustelae</i>	0	1	0	0	1/5.8%
<i>Physaloptera</i> sp.	2	2	2	0	6/35.3%
<i>Capillaria</i> sp.	1	0	1	0	2/11.8%

* Prevalence = number infected with parasite species/total number examined (Margolis et al., 1982).

ported and described from black-tailed prairie dogs from northern Colorado by Vetterling (1964). Todd and Hammond (1968b) reported *E. larimerensis* infecting *C. leucurus* and *Spermophilus tridecemlineatus* Mitchill from Wyoming, *S. armatus* Kennicott from Utah and Montana, *S. variegatus* Erxleben and *S. lateralis* Say from Utah, and *S. beecheyi* Richardson from California.

Eimeria ludoviciani Vetterling, 1964, was initially reported and described from black-tailed prairie dogs from northern Colorado. Todd and Hammond (1968a) reported *E. ludoviciani* from white-tailed prairie dogs from Wyoming.

Mixed infections of 2 or more species of *Eimeria* were found in 5 prairie dogs. One adult female was infected with both *E. larimerensis* and *E. ludoviciani*. Two juvenile prairie dogs (1 female, 1 male) were infected with *E. cynomysis* and *E. ludoviciani*. One juvenile female was infected with both *E. cynomysis* and *E. larimerensis*. One juvenile male was infected with all 3 species of *Eimeria*.

The finding of these 3 species of *Eimeria* in white-tailed prairie dogs, and previous reports of their occurrence in black-tailed prairie dogs and ground squirrels of the genus *Spermophilus*, is consistent with the findings of Todd and Hammond (1968a, b) who found that while host restriction for *Eimeria* in the Rodentia usually occurs at the genus level, the close taxonomic relationship of *Cynomys* and *Spermophilus* allows for crossover of some eimerian species.

Two adult prairie dogs were infected with muscle cysts that appeared to be of the genus *Sarcocystis* (Lankester, 1888). These cysts were ≤ 1 mm in length, rod-shaped, and oriented parallel to the muscle fibers. Further work is required

before identification of this organism can be completed. No reports of *Sarcocystis* infecting members of the genus *Cynomys* exist in the literature.

The tapeworm *Hymenolepis citelli* McLeod, 1933, was recovered from the intestine of 4 (23%) prairie dogs. This species has never been reported infecting members of the genus *Cynomys*. McLeod (1933) first reported and described *H. citelli* from ground squirrels, *Spermophilus* (syn. *Citellus*), from Manitoba, Canada. Buscher and Tyler (1975) reported this tapeworm from thirteen-lined ground squirrels (*Spermophilus tridecemlineatus*) collected from active black-tailed prairie dog towns in Oklahoma.

Cysticerci of *Taenia mustelae* Gmelin, 1790, were recovered from the liver of 1 adult female prairie dog. Hook numbers and measurements were consistent with those reported by Freeman (1956) in an extensive treatment of *T. mustelae*. This is the first report of larval *T. mustelae* from white-tailed prairie dogs.

Both mature and immature forms of *Physaloptera* sp. (Rudolphi, 1819) were attached to the gastric mucosa of 6 prairie dogs. An ulcerative gastritis was present at the point of attachment of these nematodes to the mucosa. The finding of *Physaloptera* sp. in white-tailed prairie dogs constitutes a new host record for this genus.

Capillaria sp. (Zeder, 1800) was found in liver sections of 2 prairie dogs. While whole specimens were not recovered, the location, size, and morphology of the recovered material leads us to believe this worm is most likely *Capillaria hepatica* Bancroft, 1893. The nematodes were found associated with a granulomatous inflammation. This is the first report of the genus *Capillaria* infecting members of the genus *Cynomys*.

The endoparasites infecting white-tailed prairie dogs in this study were similar to those reported from black-tailed prairie dogs (Vetterling, 1962, 1964) and ground squirrels of the genus *Spermophilus* (McLeod, 1933; Morgan, 1943; Todd and Hammond, 1968a, b). The occupation of similar habitat types (Vaughan, 1978) and utilization of similar food types, along with the close taxonomic position of these 2 genera (Bryant, 1945), may account for this similarity in parasite fauna. Definitive hosts for the larval *Taenia mustelae* reported here may be the black-footed ferret, *Mustela nigripes* (N. Kingston and J. Rockett, unpubl. data), and other mustelids; mustelids may also serve as a host for *Capillaria hepatica* (Levine, 1980).

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