A Study of the Helminth Parasites of the Pocket Gophers of Woods, Alfalfa, Grant, and Marshall Counties, Oklahoma[1]

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During the years 1950, 1951, and 1952, a study was made of the helminth parasites of the pocket gopher, *Geomys bursarius* Shaw, in Woods, Alfalfa, Grant, and Marshall counties, Oklahoma. Hosts were collected in Marshall County during the summers of each year, and in the other counties during the winters of 1950-1951 and 1951-1952.

[1] Contribution from the Department of Zoology, University of Oklahoma and the University of Oklahoma Biological Station, Lake Texoma. Taken from a thesis done under the direction of Dr. J. Teague Self in partial fulfillment of the requirements for the degree of Master of Science.

Materials and Methods

Gophers were collected by means of Victor gopher traps. Whenever possible, autopsies were made immediately after the death of the host. In some cases, however, animals had lain in the trap overnight or in the refrigerator for several hours. The difference in time had no apparent effect upon the number or condition of parasites found.

Cestodes were allowed to relax in tap water overnight, fixed in F.A.A. fixative, and stored in 70 per cent alcohol with 2 per cent glycerine added. They were stained in Mayer's paracarmine to which a small amount of Ehrlich's acid hematoxylin had been added. They were mounted in clarite. In one case, sectioning was necessary for identification.

In certain cases injection of the pleural cavity with about five ml. of 35 per cent alcohol followed by cooling for a few hours aided in the prevention of herniation of the delicate nematodes found in that location. All nematodes were fixed and stored in 70 per cent alcohol with 2 per cent glycerine added, and cleared in 20 per cent lactic acid. *En face* sections as well as other dissections were necessary for the study of specimens of the large *Mastophorus*.

Results

Of the 121 gophers autopsied, 65 (54 per cent) were parasitized by one or more species of worms. The total number of infections for each species in each county is shown in Table I. Eight hosts harbored two species each, while three were found to harbor three species each (Table II).

TABLE I

Incidence of Infection of Pocket Gophers by Each Species of Helminth in Each County

Species of parasite	Woods County	Alfalfa County	Grant County	Marshall County	Total
Hymenolepis diminuta	7	1	0	2	10
Moneococestus anoplocephaloides	10	6	7	2	25
Cittotaenia perplexa	0	0	0	2	2
Mastophorus ascaroides	0	3	1	14	18
Litomosa filaria	0	0	0	19	19
Ostertagia sp.	5	0	0	0	5
Negative	13	18	8	17	56
Total animals autopsied	32	28	15	46	121

TABLE II

Multiple Infections of Pocket Gophers by Helminths

	Woods County	Alfalfa County	Grant County	Marshall County	Total
Hosts with two species	1	0	1	6	8
Hosts with three species	1	0	0	2	3

As is shown in Table I *Hymenolepis diminuta* Rudolphi was found in a total of ten gophers from Woods, Alfalfa, and Marshall counties. None were found in gophers from Grant County. Intensity of infection ranged from zero to five worms per host. The only previous record of pocket gophers as a host for this genus was by Douthitt (3) who listed what he believed to be eight different species of *Hymenolepis* from pocket gophers including one from Oklahoma, but he did not indicate the species for any of the worms. This study, therefore, records *H. diminuta* for the first time in this host. Douthitt (3) also reported *Schizotaenia anoplocephaloides*

(=*Monoecocestus anoplocephaloides* [Douthitt] Beddard) from the pocket gopher in Oklahoma. In the present study *M. anoplocephaloides* was taken from 25 hosts and it was the most abundant and widely distributed species of helminth found, being taken from hosts in all four counties. Intensity of infection varied from zero to approximately 100 worms. *Cittotaenia perplexa* Stiles was taken only from two Marshall County gophers, and each host harbored two worms. Baer (1) reported *C. praecoquis* from *G. bursarius*, and Douthitt (3) reported an undetermined species of *Cittotaenia* from *G. bursarius* at Brainerd, Minnesota. In addition to *C. praecoquis*, Smith (7) described *C. megasacca* from *Thomomys talpoides* in Wyoming. As nearly as I can determine, my host record for *C. perplexa* is new and this is the first time that this genus has been reported from the pocket gopher in Oklahoma.

The nematode *Mastophorus muris ascaroides* (Hall) was taken from the stomachs of three hosts in Alfalfa County, one in Grant County, and 14 in Marshall County. This species was reported from *G. bursarius* in Oklahoma by Hall (4). Another nematode, identified as *Litomosa filaria* Beneden, was taken from the pleural cavities of 19 gophers collected in the immediate vicinity of the University of Oklahoma Biological Station in Marshall County. It was found in no other geographic area. As far as could be determined, the genus *Litomosa* has been reported in North America only from bats in which it inhabits the abdominal cavity. It has also been reported from the digestive tract of bats (Desportes 1937), and two species, *L. vite*, and *L. veite* (probably synonyms), have been reported from the corium of the mouse like rodent, *Rhombomys opimus* in Russia (5, 6). This, then is a new host record for the genus, as well as the first time that it has ever been reported from the pleural cavity of any animal, although a closely related genus, *Litomosoides*, seems to prefer this location. An undetermined species of nematode classified as belonging to the genus *Ostertagia* Ransom was taken from the stomachs of five gophers, all from Woods County. This worm conforms to the description of *Ostertagia* in all major characters except size, the males measuring 20.0 to 21.0 mm. in length, and the females measuring 36.0 to 40.0 mm. Most species of *Ostertagia* are described as measuring 4.0 to 7.5 mm. for males, and 6.0 to 8.3 mm. for females.

Summary

In this study, 121 pocket gophers were autopsied; 65 were parasitized by one or more species of worms. Six species of helminths were found. The cestodes were: *Hymenolepis diminuta*, in ten hosts, *Monoecocestus anoplocephaloides*, in 25 hosts, and *Cittotaenia perplexa*, in two hosts. The nematodes were: *Mastophorus muris ascaroides*, found in 18 hosts, *Litomosa filaria* in 19 hosts, and *Ostertagia* sp., in five hosts.

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