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## PARASITES OF THE BLACK-TAILED JACKRABBIT IN NORTH CENTRAL COLORADO

PHILIP C. BRITTAIN\* and DAVID R. VOTH\*

**Abstract:** Forty-four black-tailed jackrabbits, *Lepus californicus melanotis* Mearns, 1890, were collected near Denver from August, 1972, through July, 1973, and examined for parasites. Recovered parasites and their infection rates were: *Eimeria* sp. 100%, *Cittotaenia* sp. 27%, coenuri of *Multiceps* sp. 57%, *Cediopsylla inaequalis* 14%, *Hoplopsyllus affinis* 9%, *Haemodipsus setoni* 2%, *Dermacentor andersoni* 14%, and *Haemaphysalis leporis-palustris* 25%.

### INTRODUCTION

Numerous leporid parasite investigations have been conducted throughout the United States. Those few concerning the Colorado area black-tailed jackrabbit, *Lepus californicus melanotis* Mearns, 1890, have involved a specific parasite or parasite group.<sup>1,2,4,8</sup> This survey reports all parasites found in a Denver area population of black-tailed jackrabbits and compares results with other studies.

### MATERIALS AND METHODS

Forty four black-tailed jackrabbits were collected from the Rocky Mountain Arsenal near Denver, Colorado, on a monthly basis from August, 1972, through July, 1973. Carcass necropsy included the external surface of the hide, viscera, heart, subcutaneous musculature and connective tissue, and two blood smears per rabbit. All specimens were placed in separate containers and examined within 4 hours after collection. Standard techniques were used in the preservation, staining, mounting, and identification of parasites.

### RESULTS AND DISCUSSION

All rabbits were parasitized. Four harbored one species of parasite, 25 had two species, eight had three, five had four,

one had five, and one had six. Recovered parasites and their infection rates are shown in Table 1. Seasonal fluctuations of parasite prevalence were not evident.

Serial sections of swollen intestinal areas revealed the tissue stages of *Eimeria* sp. in the epithelium and connective tissue of the villi of all hosts. At least five species of *Eimeria* are known to occur in the intestines of North American rabbits, all of them causing some degree of pathogenicity.<sup>10</sup>

Twelve rabbits harbored from one to eight tapeworms of the Genus *Cittotaenia*. The key given by Wardle and McLeod<sup>13</sup> indicates that all of our specimens were *C. pectinata*, but there is some doubt as to their specific identity. *Cittotaenia* spp. are widespread in North American lagomorphs. They have been reported from black-tailed jackrabbits in eastern Colorado<sup>4</sup> and California,<sup>9</sup> from snowshoe hares, *L. americanus*, in Minnesota,<sup>6</sup> and from white-tailed jackrabbits, *L. townsendi campanius*, in North Dakota.<sup>12</sup> This genus, however, was not found in a population of black-tailed jackrabbits in southwestern Kansas.<sup>11</sup>

One to 32 tapeworm coenuri of *Multiceps* sp. were found in the skeletal muscles, the thoracic and pericardial cavities, and in the right ventricular chamber of the heart. This latter site of infection was previously reported, apparently

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for the first time, from a white-tailed jackrabbit in North Dakota.<sup>12</sup> It is generally recognized that the coenuri of rabbits, *M. packi* and *M. serialis*, cannot be distinguished by their larval forms.<sup>3,5,6,7</sup> Large numbers of these coenuri do not appear to seriously affect the health of the rabbit,<sup>4,9</sup> although ventricular cysts obviously impede circulation to some degree.

Fifteen *Dermacentor andersoni* and 29 *Haemaphysalis leporis-palustris* adult ticks were collected mainly from the head and neck region of 17 rabbits. Both species were found on three hosts, and both have been previously reported from black-tailed jackrabbits in eastern Colorado.<sup>4</sup>

Twenty fleas, *Cediopsylla inaequalis* and *Hoplopsyllus affinis*, were found on ten rabbits. Six harbored *C. inaequalis* and four *H. affinis*. It is well known that fleas abandon their hosts soon after host

death, and these figures, therefore, reflect minimum numbers. *H. affinis*, but not *C. inaequalis*, were found on the same host in eastern Colorado.<sup>4</sup>

One rabbit carried two *Haemodipsus setoni* lice. This low rate of infection (2%) would appear not to be a serious factor in the spread of lice transmitted diseases. No lice were found on any of several hundred black-tailed and white-tailed jackrabbits examined in eastern Colorado.<sup>4</sup>

Microfilaria were not present in any of the blood smears. In black-tailed jackrabbits of southwestern Kansas a 50% infection rate with *Micipsilla brevicauda* was reported.<sup>11</sup>

It is of particular interest that no *Taenia pisiformis* cysticerci were recovered in this study, nor were they in eastern Colorado.<sup>4</sup> However, this parasite has been reported from black-tailed jackrabbits in Utah,<sup>8</sup> Kansas,<sup>11</sup> and California.<sup>9</sup>

TABLE 1. Parasites of 44 black-tailed jackrabbits in north central Colorado, collected August, 1972, through July, 1973.

Parasite	Number of Parasites Recovered	Number of Rabbits Infected	Average Number of Parasites per Infected Rabbit*
Protozoans			
<i>Eimeria</i> sp.	—	44(100%)	—
Adult Tapeworms			
<i>Cittotaenia</i> sp.	42	12 (27%)	3.5 (1-8)
Larval Tapeworms			
<i>Multiceps</i> sp.	76	25 (57%)	3 (1-32)
Fleas			
<i>Cediopsylla inaequalis</i>	9	6 (14%)	1.5 (1-3)
<i>Hoplopsyllus affinis</i>	11	4 (9%)	3 (1-5)
Lice			
<i>Haemodipsus setoni</i>	2	1 (2%)	2 (2)
Ticks			
<i>Dermacentor andersoni</i>	17	6 (14%)	3 (1-6)
<i>Haemaphysalis leporis-palustris</i>	27	11 (25%)	2.5 (1-8)

\* Brackets indicate range.

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