REDESCRIPTION AND INCIDENCE OF Eimaria antelocaprae HUIZINGA, 1942 IN THE PRONGHORN ANTELOPE, Antilocapra americana (Ord, 1815)

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zoon, were the most common parasites observed among robins in this area (71.8%). This concurs with data reported elsewhere by Manwell in 1955 (J. Protozool., 2: 85-88) Bennett and Fallis in 1960 (Can. J. Zool. 38: 261-273) and Clark and Swinehart in 1966 (Bull. of Wildlife Disease Ass., 2(3): 53-54). Only generalizations can be made here since the various investigators differ on age classifications. An interesting observation was an acute case in a 9 day old nestling. Upon examining the smear from this bird, a 10-minute search period revealed 230 gametocytes in various stages of development.

Microfilariae were the next most common parasite (17.7%) found in blood and tissue smears of robins. The incidence was greater in lung smears than in blood preparations, 16.1% to 8.9% respectively. The intensity of the infections was also significantly higher in the lung smears.

Organisms of the genus *Haemoproteus* were present in only 7.3% of the birds examined. This corresponds to data reported by Bennett and Fallis (1960, Can. J. Zool. 38: 261-273), but is significantly less than the incidence of this organism reported by Manwell (1955, J. Protozool., 2: 85-88.).

Organisms of the genus *Trypanosoma* were found in 6.5% of the birds. This was determined only by examination of dried smears and probably not indicative of the true incidence. Manwell's data in 1955 (J. Protozool., 2: 85-88) also revealed a low parasitemia with this organism in robins of the high Rockies and of central New York.

Malaria was observed in only 3 juveniles (2.4%) and this was due to *Plasmodium vaughani*. This data is in general concurrence with the above mentioned researchers, with the exception of the robins of central New York (Manwell, 1955, J. Protozool., 2: 85-88), in which the incidence was relatively high (46.4%).

Upon histological examination of tissue sections taken from infected nestlings and juveniles, the author was unable to find hepatic and megaloschizonts of members of the genus *Leucocytozoon*. No reproductive stages of other hematozoa were observed in tissue sections during this study.

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REDESCRIPTION AND INCIDENCE OF *Eimeria antelocaprae* HUIZINGA, 1942 IN THE PRONGHORN ANTELOPE, *Antilocapra americana* (Ord, 1815)

Huizinga (1942, J. Parasit. 28: 167-168) briefly described *Eimeria antelocaprae*, with measurements of 200 oocysts from 3 fecal samples collected from antelopes, *Antilocapra americana* (Ord, 1815), near Laramie, Wyoming. Sporulated oocysts were inadequately described and illustrated. Honess and Winter (1956, Wyoming Game and Fish Comm. Bull. No. 9) reported the occurrence of oocysts of this species in antelopes in Carbon County, Wyoming. No other information is known concerning the prevalence of coccidia in the Pronghorn Antelope.

Fecal samples from 63 antelopes were examined during the period from 11 August, 1965, to 21 April, 1966. Of these, 48 (38 females and 10 males) were collected in Yellowstone National Park, Wyoming, the remaining 15, all females, were collected in the National Bison Range, Moeise, Montana. Animals were aged by the method of Dow and Wright (1962, J. Wildl. Mgmt. 26: 1-18). The ages were confirmed by Wright. Fecal pellets were obtained from the colon of animals which had been shot. The pellets were stored in 2.5% potassium dichromate solution; samples were prepared for examination for oocysts with the aid of flotation using

Sheather's sugar solution. All positive samples were placed in 2.5% potassium dichromate solution at room temperature for up to 10 days to allow sporulation of the oocysts. Because the samples were intermittently sent by mail, it was not possible to determine the sporulation time. However, oocysts in which the sporont completely filled the oocysts sporulated in less than 4 days at room temperature. After sporulation of the oocysts had occurred, the samples were passed through a wire screen, pooled in potassium dichromate solution in a single flask, and stored in a refrigerator. From this pooled material, ten separate flotations were made and 20 oocysts from each flotation were randomly selected for measurement. All measurements were made with a Leitz Ortholux microscope at 760 X. Drawings were made with the aid of a camera lucida.

Sixteen (24%) of the animals were infected with *E. antelocaprae*. Ten, 21% (20% of males and 21% of females) of the animals from Yellowstone National Park and 6, 40%, from the National Bison Range had coccidia. The data on the incidence of infection in different age groups are presented in Table 1.

Table 1. *Percent of antelope by age group infected with* E. antelocaprae

Age Class	No. Examined	No. Infected	Percent Infected
Under 1 Year	7	2	29
1 Yr. - 1 Yr. 10 mo.	10	3	30
2 Yr. - 2 Yr. 10 mo.	6	0	0
3 Yr. - 3 Yr. 10 mo.	4	0	0
4 Yr. - 4 Yr. 10 mo.	5	2	40
5 Yr. - 5 Yr. 10 mo.	4	1	25
6 Yr. - 6 Yr. 10 mo.	7	3	43
7 Yr. - 7 Yr. 10 mo.	4	1	25
8 Yr. - 8 Yr. 10 mo.	6	3	50
9 Yr. and over	10	1	10
Totals	63	16	25

Description of sporulated oocysts: (measurement in microns, mean in parentheses; figure 1)

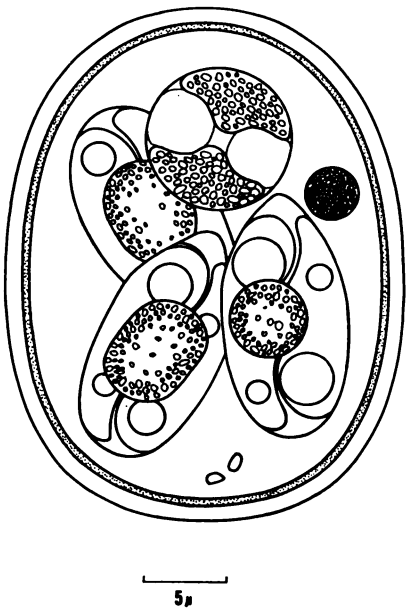

Figure 1. *Sporulated oocyst of* Eimeria antelocaprae.

The shape is broadly ellipsoidal with a length to width ratio of 1.04 to 1.37 (1.11) measuring 28 to 35 by 24 to 29 (31.3 by 26.7). The sporont completely fills the oocyst in fresh material; after contraction it is spherical and 26 by 19 (21.4) in diameter. The oocyst wall is about 2 microns thick and has two distinct layers. The outer layer is smooth and contributes about two-thirds of the total thickness of the oocyst wall. The outer layer is light yellow-green or blue and the inner wall is brown. No micropyle or thinning of the oocyst wall could be observed.

One or two polar granules are present in freshly sporulated oocysts. A distinct oocyst residuum, 2 to 5 microns in diameter, composed of coarse granules, was present in 86% of the oocysts that were examined immediately after sporulation. When the oocysts were examined 2 to 4 weeks after sporulation, all of the oocyst residua had disintegrated into irregularly shaped granules that

were indistinguishable from the polar granules.

The sporocysts measure 13 to 17 by 8 to 11 (15.2 by 9.1). Stieda bodies are present. Two sporocyst residual bodies occur on opposite sides of each sporocyst. Each body is round or ellipsoidal in side view; in end view it appears triangular in shape, with one convex outer margin, and two concave inner margins, which are adjacent to the two sporozoites. One residuum is usually situated near the middle of the sporocyst, whereas the other is displaced toward one end. In side view, the granules of each residuum appear loosely packed, especially in the central area of the body.

The sporozoites lie lengthwise in the sporocysts. Two refractile bodies are present in each sporozoite. The posterior body is round or ellipsoidal and is about twice as large as the round anterior body. The nucleus is located between the two refractile bodies.

Huizinga (1942, J. Parasit. 28: 167-168) did not describe a Stieda body, sporocyst residuum, refractile body or polar granule in the oocysts of *E. antelocaprae*. He reported oocyst residual material to be present only as a few irregularly shaped granules. Possibly the oocysts he examined had been sporulated for some time so that the oocyst residuum had disintegrated into the irregularly shaped particles that we observed.

Three oocysts of a different species of *Eimeria* were present in the sample of one animal from the National Bison Range. These oocysts were ovoid, measuring 34 to 35 by 17 to 20 microns. A granular oocyst residuum, 2 to 4 microns, in diameter was present. No polar granule was observed. The oocyst wall was about 2.5 microns thick and composed of two layers, the outer of which was rough. A distinct micropyle 3 to 4 microns in diameter was present. The micropyle was surrounded by a collar-like thickening of the outer wall. The sporocysts were 12 to 14 by 5 to 7 microns in diameter. A Steida body and sporocyst residuum were present. These oocysts were not observed before sporulation. Additional information concerning this form must be obtained before a conclusion can be reached as to whether it represents a new species from the antelope.

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FATAL POISONING OF A FOX SNAKE (Elaphe vulpina) BY FEEDING A TOAD (Bufo americanus)

An apparently healthy fox snake, 55 inches long, which refused food after being brought into captivity, was force-fed a live medium-sized common toad. Within two minutes after the toad was swallowed, the snake showed signs of discomfort and the live toad was ejected. This was followed by violent writhing and threshing about of the anterior parts of the snake's body and repeateded opening and closing of the mouth. This activity subsided within fifteen minutes. The animal's behaviour was interpreted as merely a temporary reaction to irritating properties of the toad's skin glands. Observation was discontinued. When its cage was checked six hours later, the snake was found dead.

Necropsy revealed that the lung was collapsed; the ventral thoracic wall was drawn into the rib cage to form a marked concavity. Lung tissues were congested and edematous. Petechial hemorrhages were scattered over the serosal surface of the stomach. The kidneys were congested. Histologic examination confirmed the gross findings.