

## A LARGE *BABESIA* SP. AND A *THEILERIA*-LIKE PIROPLASM OF THE SQUARE-LIPPED RHINOCEROS

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### SUMMARY

The occurrence of two different species of piroplasms in the square-lipped rhinoceros (*Ceratotherium simum*) in Zululand, South Africa is recorded. The parasites concerned are a large *Babesia* sp. and either a *Theileria* or a small *Babesia* sp.

### INTRODUCTION

During routine immobilization of rhinoceroses (*Ceratotherium simum* Burchell, 1817) for the purpose of translocation, between 5th July, 1967 and 7th March, 1969, thin blood films were prepared from apparently healthy animals, stained with Giemsa and examined microscopically. A total number of 106 animals were involved of which 64 were adults, 27 subadults and 15 calves. Individuals still accompanied by an adult cow were regarded as calves; except for one animal, which was about two months old, their ages were probably between nine months and three years. Those considered to be subadults were not accompanied by an adult female, but were not fully grown; they were thought to be between three and seven years of age. Adults were fully grown animals.

### OBSERVATIONS

The parasites observed were of two distinct types. One, a large *Babesia* sp., was seen in blood films from two animals only, namely those from a female and from a male calf made on the 21st February and 7th October, 1968, respectively. The large piroplasms were extremely rare. Only two parasitized erythrocytes could be found in the male calf. Each cell contained two pyriform parasites of approximately equal size (Fig. 1). The pale, purple-staining nuclear material was concentrated towards the attenuated ends, where, in one case, the daughter individuals still appeared to be attached to each

other after a recent division. The cytoplasm was light blue in colour. The small piroplasms described below were also fairly frequent in this animal.

Two parasitized cells, each harbouring a single large organism, were also found in the female calf. They were respectively round and roughly ovoid in shape. In the round form the nuclear material appeared to be lining the periphery whilst the central portion was unstained. The internal structure of the ovoid form was similar to that of the pear-shaped parasites described above.

The other species was a much smaller piroplasm and was noted more frequently. It was rather pleomorphic in that rod-shaped, comma-shaped, round and oval forms were seen (Fig. 1). In the round and oval forms the nucleus was usually represented by a purple-staining cap extending from one- to three-quarters of the way around the periphery of the parasite. Sometimes the nucleus was a minute granule or even lobed. Occasionally a dividing line appeared to bisect the parasite. The cytoplasm stained a pale blue, if at all. No maltese cross forms could be found. It was not possible to decide whether a *Theileria* or a small *Babesia* was involved, but the former seems to be more likely in view of the presence of rod-shaped forms.

Small piroplasms were recorded in smears from 34 animals (Table). The degree of infection was arbitrarily classified as either fairly frequent or rare. In the most heavily infected animal, an immature male, 3.3% of the erythrocytes contained one, sometimes two and very occasionally three of these parasites. They were rare in preparations from 25 animals and fairly frequent in those from another nine. No small piroplasms could be found in smears from the remaining 72 rhinos but the possibility that they were present in very small numbers cannot be excluded. Positive films were

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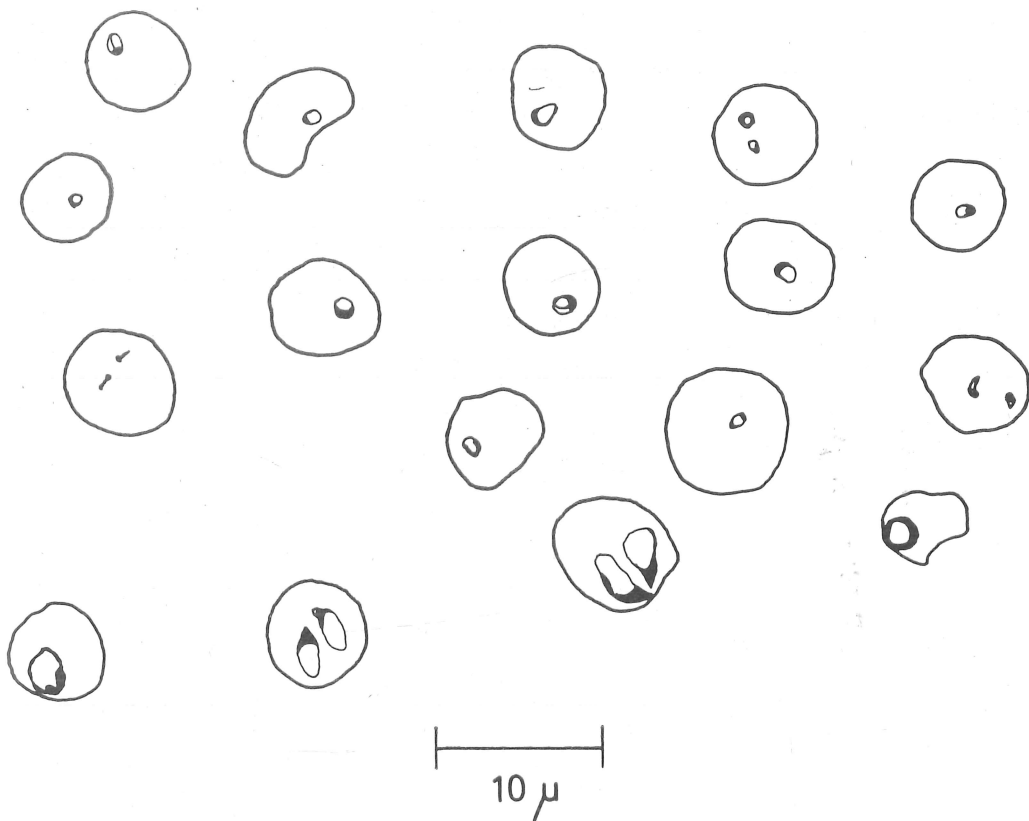


FIG. 1. The erythrocytic parasites, illustrated with the aid of a drawing tube, represent the large *Babesia* sp. in the bottom row and the *Theileria*-like parasite above.

Table: THE INCIDENCE OF PARASITIZATION OF DIFFERENT AGE GROUPS WITH *THEILERIA*-LIKE ORGANISMS

	No. examined	No. Pos.	% pos.
Adults	64	16	23.9%
Subadults	27	12	44.4%
Calves	15	6	40.0%
Total juveniles	42	18	42.8%
Total	106	34	32.1%

recorded from 32% of the 62 males and from 30% of the 47 females. Young animals were more often parasitized (42.8%) than adults (23.9%; Table). The incidence of infection calculated on a monthly basis in terms of the

smears made is illustrated in Fig. 2. No definite seasonal trend is noticeable.

#### DISCUSSION

Small piroplasms have been seen in the square-lipped as well as the black rhinoceros (*Diceros bicornis* [Linnaeus, 1758]) in Zululand by Neitz and he has also observed a *Babesia* sp. in the latter host (personal communication, 1970). Large as well as small piroplasms have also been recorded in the black rhinoceros by Brocklesby<sup>1</sup> in Kenya, who refers to earlier reports on the large parasite by Jarrett, Jennings, Murray and Harthoorn (1964) and Brocklesby and Vidler (1965).

As far as we can determine this is the first record of a large *Babesia* in the square-lipped rhinoceros. Whether it is specific for this particular host or perhaps also occurs in the black rhinoceros remains to be determined. The number of parasites seen was too small to warrant a comparison with those of the black rhinoceros at this stage.

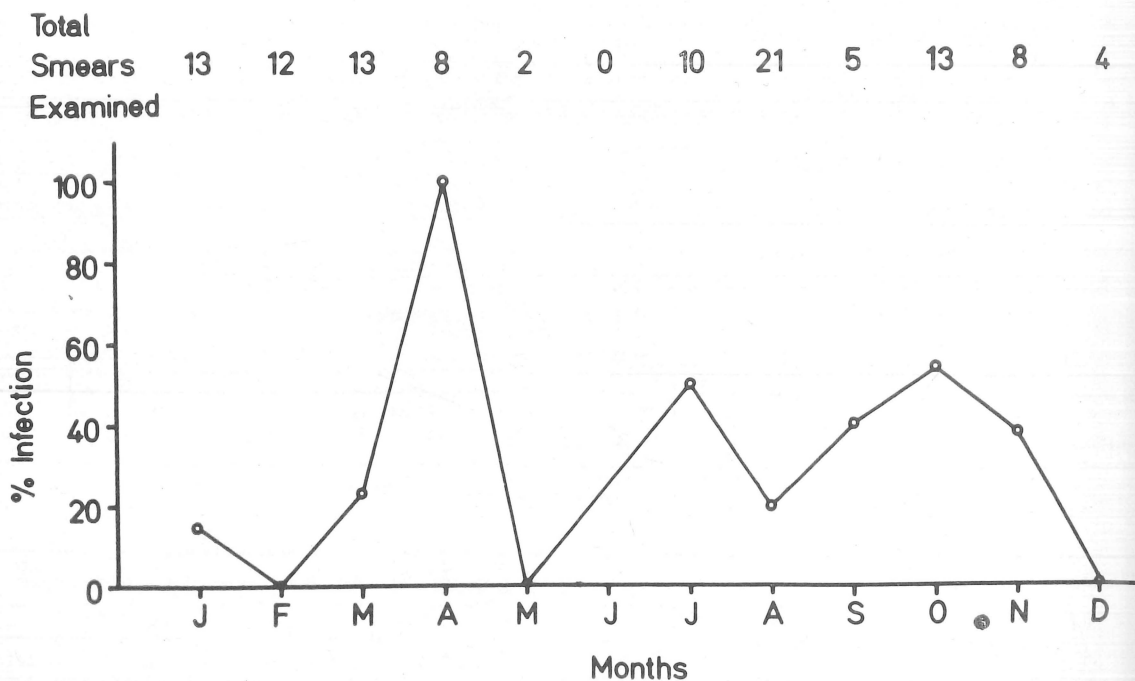


FIG. 2. Graph illustrating the monthly incidence of infection as a percentage of the smears during the month concerned.

REFERENCE

1. Brocklesby D.W. 1967 *Vet. Rec.* 80:484

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