PARASITES OF DOMESTIC AND WILD ANIMALS IN SOUTH AFRICA. IX. HELMINTHS IN BLESBOK*  

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ABSTRACT  
Four blesbok culled in the Rietvlei Nature Reserve during May 1972 were each infested with Trichostrongylus axei and Impalata nudicollis. Some of these animals also harboured Haemonchus bedfordi, Haemonchus contortus, Trichostrongylus falcatus, Skrjabinema alata and Avitellina centripunctata.  
Thirty-two blesbok were culled in pairs at approximately 4-5 week-intervals in the Percy Fyfe Nature Reserve from July 1972 to November 1973. Adult H. contortus were recovered in fair numbers from buck slaughtered from August 1972 to February 1973 and during November 1973. Peak numbers of 4th stage larvae were recovered from individual animals slaughtered during October 1972, February and March, and July to October 1973.  
Peak burdens of T. falcatus were recovered during October to December 1972 and November 1973. The largest numbers of adult I. nudicollis were recorded from January to July and during September 1973.  
Other helminths recovered were T. axei, S. alata and A. centripunctata. Avitellina centripunctata, H. bedfordi and S. alata are new records for the blesbok.  

INTRODUCTION  
Of the numerous antelope species in South Africa, the blesbok lends itself to semi-domestication more readily than most other species. The relative simplicity with which they are captured and contained and the fact that they breed readily in captivity has led to blesbok being kept on many farms as a source of income from hunting or in small game parks as an attraction. Both systems require a degree of confinement and this may lead to problems with internal parasites. This did indeed occur in the bontebok, a closely related species, in the National Bontebok Park in the Bredasdorp district (Van der Walt & Ortlepp, 1960).  
Several of the nematodes parasitic in the blesbok have been described by Mönning (1931, 1932), while Round (1968) gives a check-list of the helminths recovered from this species. No studies on the seasonal fluctuations of worm burdens in the blesbok have been published and, with the exception of the surveys of Bindernagel & Todd (1972) in buffalo in Uganda and of Baker & Anderson (1975) in the white-tailed deer in Canada, few such studies in antelope have apparently been undertaken.  

* This survey was conducted while the author was employed at the MSD Research Centre, Hennops River  
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The blesbok culled in the present studies were examined also for the presence of larvae of oestrus flies, the findings of which have been published separately (Horak & Butt, 1977).  

SURVEY 1. HELMINTHS IN BLESBOK IN THE RIETVLEI NATURE RESERVE  
MATERIALS AND METHODS  
The Rietvlei Nature Reserve (25°53'S; 28°17'E; Alt. 470 m) is situated to the south-east of Pretoria and during May 1972 it became necessary to cull a number of blesbok rams. The lungs, livers and gastro-intestinal tracts of 4 of these animals were processed for worm recovery, as described by Horak & Louw (1977).  

RESULTS  
The number of helminths recovered from the blesbok, which for convenience have been numbered from 1-4, is summarised in Table 1.  
All the buck harboured Trichostrongylus axei in small numbers, and Impalata nudicollis in burdens varying between 1970 and 20583 worms. At the same time Haemonchus bedfordi, Haemonchus contortus, Trichostrongylus falcatus, Skrjabinema alata and Avitellina centripunctata were recovered in small numbers from individual animals.
TABLE 1 The worm burdens of 4 adult blesbok rams culled in the Rietvlei Nature Reserve

<table>
<thead>
<tr>
<th>Blesbok No.</th>
<th>Date culled</th>
<th>Numbers of helminths recovered</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Haemonchus spp.</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4th</td>
</tr>
<tr>
<td>1</td>
<td>16 May 1972</td>
<td>0 0</td>
</tr>
<tr>
<td>2</td>
<td>16 May 1972</td>
<td>0 0</td>
</tr>
<tr>
<td>3</td>
<td>16 May 1972</td>
<td>0 0</td>
</tr>
<tr>
<td>4</td>
<td>23 May 1972</td>
<td>60 0</td>
</tr>
</tbody>
</table>

I. nud = I. nudicollis
4th = Fourth stage larvae
Avit. = A. centripunctata

DISCUSSION

Haemonchus bedfordi, S. alata and A. centripunctata had not previously been recovered from blesbok. H. bedfordi, however, was recovered from a closely related antelope, the topi (Damaliscus korrigum), by Sacks, Gibbons & Lweno (1973).

The small numbers of immature and adult Haemonchus spp. recovered are in sharp contrast to the large numbers of this parasite encountered at this time of year in tracer sheep (Horak & Louw, 1977; Horak, 1978) and calves (Horak & Louw, 1978) grazed within 40 kilometres of the Rietvlei Reserve. Because of the small number of animals examined in this survey, the reasons for this difference are difficult to suggest.

The recovery of large numbers of I. nudicollis, originally described from the blesbok by Monnig (1931), suggests that this parasite is not only well adapted to blesbok but also to the prevailing environment.

SURVEY 2. HELMINTHS IN BLESBOK IN THE PERCY FYFE NATURE RESERVE

MATERIALS AND METHODS

Some of the background of the Percy Fyfe Nature Reserve and many of the methods employed in this survey appeared in a previous publication (Horak & Butt, 1977).

The blesbok were shot in pairs at 4-5 week-intervals from 31 July 1972 to 2 November 1973. During August and September 1973, however, the interval between cullings was only 10 days.

The lungs, livers and gastro-intestinal tracts were transported to the laboratory at Hennops River and processed for worm recovery. The lungs, processed for the recovery of oestrid larva (Horak & Butt, 1977) were also examined for the presence of helminths. The livers were processed and examined as described by Snijders, Horak & Louw (1971), while 1/10th samples of the abomasal, small intestinal and large intestinal ingesta were washed separately over sieves with 38 micron apertures and the remainder over sieves with 150 micron apertures. These samples were examined microscopically and macroscopically for helminths.

RESULTS

The buck were numbered from 5-36 and the total worm burdens of each animal are presented in Table 2.

Haemonchus contortus: Peak burdens of 4th stage larvae were recovered from individual animals during October 1972 and February, March and July to October 1973. Adult burdens exceeded 150 worms in individual animals from August 1972 to March 1973 and again in November 1973.

Trichostrongylus spp.: Trichostrongylus axei was recovered in small numbers from individual animals virtually throughout the survey period. Peak burdens of T. falcatus were recovered from individual animals from October to December 1972 and during November 1973.

Impalaia nudicollis: No seasonal pattern could be determined for the 4th stage larvae of this species. Peak adult burdens were recorded from January to July and during September 1973.

Skrjabinema alata: This species occurred in fairly large numbers in some animals, while other animals were not infested. The 4 blesbok lambs examined were all infested with this nematode.

Avitellina centripunctata: Eleven buck harboured these cestodes and burdens varied from 1-7 worms.

DISCUSSION

As only 6 blesbok were originally introduced in 1933 (Horak & Butt, 1977), the helminths that were introduced with them would have had to be well adapted to blesbok and adaptable to the local environment to have survived. That a total of 6 helminth species only was recovered in this survey is probably a reflection of this fact. Since other animals in the reserve, notably tsessebe and roan antelope, were not infested, the latter animals harboured the same species as the blesbok, and thus could serve as an alternative source of infestation.

The seasonal fluctuations in worm burdens in this survey must be considered in the light of 2 factors: firstly, that only 2 animals were slaughtered on each occasion and, secondly, that the number of blesbok was reduced from 780-34 during the first 2 months of the survey (Horak & Butt, 1977). As a result of this the grazing pressure was altered from approximately 1 animal/2 ha at the outset to 1 animal/50 ha during the remainder of the survey. Despite the small numbers of animals examined and the alteration in grazing intensity reducing the chances of infestation, certain trends in the worm burdens emerged.
The presence of peak burdens of adult *H. contortus* in those animals slaughtered from September or October to March corresponds to observations made on this parasite in surveys in sheep in South Africa (Rossiter, 1964; Viljoen, 1964; Horak, 1978), the worm counts in the blesbok in the same season are by comparison low. This could, however, be a reflection of different stocking densities in the various surveys.

The recovery of *T. falcatus* in fairly large numbers, generally only from those animals slaughtered from October to December is difficult to explain and would suggest that this parasite is able to survive on the pasture as eggs or pre-infective larvae during the remainder of the year. In the Karoo, Viljoen (1969) recovered the greatest numbers of *T. falcatus* from tracer lambs exposed during the winter months, thus demonstrating that the free-living stages can survive on the pasture despite the virtual absence of rain. The possibility of cross-immunity between this nematode and *I. oxyurus*, which also occurs in the small intestine, cannot be excluded, as peak burdens of the one occurred at those times when burdens of the other were low. The likelihood of cross-immunity between helminths affecting the establishment of certain species in natural infestations has been suggested by Reinecke (1964), Muller (1968) and Viljoen (1969).

### Table 2: The worm burdens of blesbok culled in the Percy Fyfe Nature Reserve

<table>
<thead>
<tr>
<th>Blesbok No. and age</th>
<th>Date culled</th>
<th>Numbers of helminths recovered</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><em>H. contortus</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4th</td>
</tr>
<tr>
<td>5, 2T</td>
<td>31 Jul.</td>
<td>0</td>
</tr>
<tr>
<td>6, FM</td>
<td>31 Jul.</td>
<td>0</td>
</tr>
<tr>
<td>7, FM</td>
<td>28 Aug.</td>
<td>6</td>
</tr>
<tr>
<td>8, Aged</td>
<td>28 Aug.</td>
<td>44</td>
</tr>
<tr>
<td>9, 2T</td>
<td>2 Oct.</td>
<td>40</td>
</tr>
<tr>
<td>10, 2T</td>
<td>2 Oct.</td>
<td>420</td>
</tr>
<tr>
<td>11, Lamb*</td>
<td>30 Oct.</td>
<td>0</td>
</tr>
<tr>
<td>12, 4T</td>
<td>30 Oct.</td>
<td>245</td>
</tr>
<tr>
<td>13, Lamb*</td>
<td>4 Dec.</td>
<td>30</td>
</tr>
<tr>
<td>14, Lamb*</td>
<td>4 Dec.</td>
<td>10</td>
</tr>
</tbody>
</table>

4th = Fourth stage larvae  
1mm = Immature worms  
* = Ewe  
T = Tooth  
FM = Full mouth  
Lamb = Born during October or November of previous year  
Avit. = *A. centripunctata*
Although burdens of *I. nulicollis* varied considerably, the trend appeared to be for total worm burdens to increase from January to April. These worms and later infestations probably survived until July or even September, after which a decline in reinfection coupled with death or expulsion of the existing worms resulted in low burdens until the following January. This pattern of incidence corresponds fairly closely to that observed for *Cooperia* spp. in cattle by Horak & Louw (1978).

*S. alata* was originally described from sheep by Mönnig (1932). Its prevalence in the animals examined in both the present surveys would suggest that the blesbok is a suitable host for this nematode. The same would seem to apply to *A. centripunctata*, although it too has not previously been described from this host.

**Acknowledgements**

The assistance of Dr D. E. Wilson and Mr J. M. Smith of the Transvaal Provincial Administration with the culling of the buck is gratefully acknowledged.

I am also indebted to Mr M. J. Butt for transporting many of the buck to Hennops River, to Mrs S. M. Raymond and Miss I. Penderis for assisting with the helminth recoveries and to the Division of Nature Conservation of the Transvaal Provincial Administration for placing the blesbok at my disposal.

**References**


