

THE HELMINTHS OF VARIOUS ANTELOPE SPECIES FROM NATAL

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ABSTRACT

BOOMKER, J., KEEP, M. E., FLAMAND, J. R. & HORAK, I. G., 1984. The helminths of various antelope species from Natal. *Onderstepoort Journal of Veterinary Research*, 51, 253-256 (1984).

Helminth parasites were collected from 2 bushbuck, *Tragelaphus scriptus*, 2 red duiker, *Cephalophus natalensis*, 1 oribi, *Ourebia ourebi*, and 4 reedbuck, *Redunca arundinum*, that died or were culled in various parts of Natal. One trematode genus, 1 cestode genus and 12 nematode species were recovered. *Haemonchus contortus*, *Ostertagia harrisi*, *Trichostrongylus capricola*, *Trichostrongylus vitrinus*, *Cooperia rotundispiculum* and *Setaria scalprum* are new parasite records for the red duiker. *Trichostrongylus colubriformis* is a new parasite record for the oribi and *Longistrongylus schrenki*, *Trichostrongylus falculatus*, *Trichostrongylus colubriformis* and *Dictyocaulus viviparus* are recorded from the reedbuck for the first time. An unidentified paramphistome was also recovered from the reedbuck.

INTRODUCTION

The helminths of antelope occurring in and around the Natal game reserves have received little attention in the past. Such parasites as are known have been collected incidentally. The only records of the helminth burdens in bushbuck, *Tragelaphus scriptus*, oribi, *Ourebia ourebi*, common reedbuck, *Redunca arundinum*, and red duiker, *Cephalophus natalensis*, from this province of South Africa are provided by Le Roux (1930) and Keep (1983).

The habitat and food preferences of bushbuck and oribi in the Transvaal have been briefly described by Boomker, Horak & De Vos (1984). Both antelope are browsers, feeding on a large variety of plants.

The red duiker is a small antelope that is restricted to forested areas (Rautenbach, 1982). Very little is known about this animal, but Pienaar (1963) and Heinichen (1972) state that it is a delicate browser. Heinichen (1972) found it to be a nocturnal species, occurring singly or in pairs.

Reedbuck are medium-sized antelope that occur in well-grassed flatlands or rolling hills close to permanent water (Dorst & Dandelot, 1972; Rautenbach, 1982). Jungius (1971) and Venter (1979) discussed their ecology and food plant preferences and concluded that they are grazers, feeding for a large part on grasses unpalatable to other antelope.

The helminths recovered from these antelope are listed by Round (1968). Boomker *et al.* (1984) updated the list of parasites from bushbuck and oribi in the Transvaal, and Keep (1983) updated that of the helminths from the larger indigenous mammal species in Natal.

MATERIALS AND METHODS

Two male bushbuck and 2 red duiker males were shot in March 1983 at Charters Creek (28°14'S; 32°25'E) on the western shores of Lake St Lucia. Their gastro-intestinal parasites were collected as described by Reinecke (1973). The hearts, lungs and livers were processed for parasite recovery as described by Horak (1978a).

The parasites of a single male oribi, which died on a farm near Pietermaritzburg (29°58'S; 29°52'E) in September 1982, were collected.

Four male reedbuck were collected at different localities in Natal. Two were from near the Himeville Nature Reserve (29°44'S; 29°32'E) and were shot in August and

December 1982 respectively. Another was obtained at Midmar Dam (29°30'S; 30°9'E) in October 1982, and the 4th was killed by a vehicle near Estcourt (28°58'S; 29°52'E) in December 1982.

The parasites of the rumen, the abomasal contents and digests, the small and large intestinal contents, the lungs and the abdominal cavity of 1 of the reedbuck from Himeville (No. 1) and the 1 from Midmar Dam (No. 2) were collected. Only the abomasal and small intestinal contents of the second animal from Himeville (No. 4) and the abomasal contents of the animal from Estcourt (No. 3) were available for examination. None of their hearts and livers were processed for parasites.

Separate aliquots representing 1/10th of the volume of the ingesta of the abomasum, small and large intestines of the 2 red duikers were examined for parasites. Two aliquots, each representing 1/50th of the volume of the gastro-intestinal ingesta of the bushbuck, were examined. Total parasite counts were made on the ruminal, abomasal and intestinal contents of each of the reedbuck and the oribi.

RESULTS

The helminths recovered from the bushbuck and the red duikers are listed in Table 1. Four nematode species and the larvae of a cestode were recovered from the bushbuck, and 6 nematode species from the red duikers. All the parasites found in the red duikers are new records for this antelope in South Africa.

The oribi harboured the following parasites: *Trichostrongylus falculatus*, 61 males; *Trichostrongylus colubriformis*, 6 males; *Trichostrongylus* spp., 52 females; *Cooperia yoshidai*, 9 males and 8 females. A total of 136 worms were recovered of which *T. colubriformis* represents a new parasite record.

The helminths from the reedbuck are listed in Table 2. One trematode genus and 8 nematode species were recovered, the paramphistome, *Longistrongylus schrenki*, *T. falculatus*, *T. colubriformis* and *Dictyocaulus viviparus* being new parasite records.

DISCUSSION

When compared with the numbers of species recovered and the size of the worm burdens of bushbuck from the Kruger National Park (KNP), as reported by Boomker *et al.* (1984), the 2 bushbuck from Charters Creek, Natal, had fewer species and smaller burdens. One possible explanation is that relatively few antelope species are found at Charters Creek, and that those that do occur there, such as greater kudu, nyala, bushbuck, red, blue and grey duikers, are almost exclusively browsers that usually carry few worms. *Ostertagia harrisi*, *Setaria africana* and *Taenia* spp. larvae were found in bushbuck from both localities, but *Gongylonema* sp. occurred in 1 bushbuck from Charters Creek only.

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TABLE 1 The helminth burdens of bushbuck and red duikers from Charters Creek, Lake St Lucia

Host, age and sex	<i>Haemonchus con-</i> <i>tortus</i>		<i>Ostertagia harrisi</i>			<i>Trichostrongylus</i> spp.		<i>Trichostrongylus</i> <i>capricola</i>		<i>Trichostrongylus</i> <i>virinus</i>		<i>Cooperia roundis-</i> <i>piculum</i>		<i>Paracooperia</i> <i>devossi</i>			<i>Gongylonema</i> sp.		<i>Setaria scalprum</i>		<i>Setaria africana</i>		<i>Taenia</i> spp. larvae		Total worm burden
	♀	♂	L ₄	♀	♂	♀	♂	♀	♂	L ₄	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂			
Bushbuck: Prime adult ♂	0	0	0	24	14	0	0	0	0	0	0	0	0	1	111	0	2	1	0	0	2	1	1	1	157
Old ♂	0	0	0	60	47	0	0	0	0	30	0	0	0	11	11	0	0	0	0	0	2	2	1	1	164
Red Duiker: Young adult ♂	0	0	2	2	0	267	165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	436
Old ♂	10	10	1	3	2	2 212	1 075	153	600	461	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4 528

L₄ = 4th stage larvae

TABLE 2 The helminth burdens of common reedbuck from various localities in Natal

Date and locality	No.	Age and sex		Paramphistomes		<i>Haemonchus contortus</i>		<i>Longistrongylus</i> <i>schenki</i>		<i>Cooperia yoshidaei</i>		<i>Trichostrongylus</i> spp.		<i>Trichostrongylus</i> <i>falcatus</i>		<i>Trichostrongylus</i> <i>colubriformis</i>		<i>Dicyocaulus</i> <i>viviparus</i>		<i>Setaria</i> spp.		<i>Bunostomum</i> sp.		Total worm burden
		A	L ₄	♀	♂	L ₄	♀	♂	L ₄	♀	♂	L ₄	♀	♂	♀	♂	♀	♂	♀	♂				
Himeville: Aug 1982	1	Adult ♂	0	0	2	0	5	83	0	0	103	0	0	0	0	0	6	8	6	6	0	0	0	255
Dec 1982	4	Adult ♂	4	25	68	8	4	672	18	0	752	0	0	0	0	0	0	2	2	1	9	29	1 597	
Midmar Dam: Oct 1982	2*	Adult ♂	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Estcourt: Dec 1982	3**	Subadult ♂	0	18	13	0	31	665	53	0	643	159	23	13	0	0	0	0	0	0	0	0	0	0

A = Adults

L₄ = 4th stage larvae

* = only abomasal parasites collected

** = only abomasal and small intestinal parasites collected

The finding of *Paracooperia devossi* in the Natal bushbuck supports the argument of Boomker & Kingsley (1984) that this parasite has only recently become a parasite of bushbuck. This parasite had not previously been found in any bushbuck from the various Natal game reserves (Keep, 1983), and so far it appears to be confined to the eastern parts of the country.

The helminths recovered from the red duikers are interesting. *Haemonchus contortus* is a cosmopolitan parasite of artiodactylids (Gibbons, 1979), and in South Africa it is usually associated with domestic animals or with antelope in contact with domestic animals (Boomker, unpublished data, 1981). Although currently there are no domestic ruminants at Charters Creek, they were there prior to its proclamation as part of the St Lucia Nature Reserve (Pringle, 1982), and their nematodes were possibly passed on to the antelope during that time.

The 2 *Trichostrongylus* spp. that were recovered were identified as *Trichostrongylus capricola* and *Trichostrongylus vitrinus*, although neither conforms exactly to its description as given by Ransom (1911) and Looss (1905). *T. capricola* from the red duikers had spicules 0,092–0,120 mm long as opposed to 0,130–0,149 mm recorded by Ransom (1911), and 0,114–0,149 mm recorded by Levine (1980). *T. vitrinus* had spicules 0,120–0,159 mm long as opposed to 0,160–0,170 mm given by Looss (1905) and 0,149–0,176 mm given by Levine (1980). The shorter spicule lengths may be due to the host's reaction stimulated by prior infestations, as described by Keith (1967), for *Cooperia pectinata*. Specimens from Europe of both *T. capricola* and *T. vitrinus* from sheep and goats were examined, and the length of their spicules found to be within the ranges given by Levine (1980). The membranous alae surrounding the spicules, however, were not as well developed as those of the worms from the red duikers. Furthermore, Levine (1980) states that *T. capricola* occurs in the small intestine and abomasum of its hosts and *T. vitrinus* in the duodenum and rarely in the abomasum. Both species, however, occurred predominantly in the abomasa of the red duikers. *T. capricola* has not been recorded before from South African artiodactylids, either free-living or domesticated, but *T. vitrinus* has been found in sheep in the south-western Cape Province (Muller, 1968). Because both the dorsal ray and the spicules of the *Trichostrongylus* spp. from the red duiker were similar to those of *T. capricola* and *T. vitrinus*, they are identified as such, although closer scrutiny may prove them to be new species.

As yet, *O. harrisi* has been found only in bushbuck (Round, 1968; Boomker *et al.*, 1984), from which it was originally described (Le Roux, 1930). Its presence in the red duikers is probably due to the close association of these antelope and bushbuck at Charters Creek, as well as their similar habitat preferences.

The parasites of the oribi from Pietermaritzburg are somewhat similar to those of the oribi from the KNP (Boomker *et al.*, 1984). *Impalaia tuberculata*, *Cooperia fuelleborni* and *O. columbianum*, however, were not present in the Natal oribi and *T. instabilis* was replaced by *T. colubriformis*. From this and other surveys of the helminth parasites of antelope it appears that *I. tuberculata* and *T. instabilis* favour the drier parts of the country such as the Transvaal Bushveld and Lowveld.

Keep (1983) lists the helminths recovered from the reedbuck, but since no references to previous studies on their burdens in South Africa could be found, no comparisons could be made with the results of this investiga-

tion. *H. contortus*, *T. falculatus* and *T. colubriformis* are common parasites of ruminants, both domestic (Viljoen, 1964, 1969; Muller, 1968) and free-living (Horak, 1978a, b).

C. yoshidai was originally described from the reedbuck (Mönnig, 1939), but it has subsequently also been recorded from mountain reedbuck (Baker & Boomker, 1973), blesbok (Evans, 1978; Horak, Brown, Boomker, De Vos & Van Zyl, 1982; Keep, 1983) and oribi (Boomker *et al.*, 1984). *C. yoshidai* appears to be well adapted to all the hosts in which it has been found.

D. viviparus occurs on isolated farms (Reinecke, 1983) and was recovered only from the 2 reedbuck shot at Himeville. This village is situated in an area that forms part of the eastern watershed where the summers are moderate and the winters cold. The conditions are favourable for the survival of the free-living stages, which are sensitive to heat and desiccation, but are resistant to cold (Oakley, 1979).

Small numbers of *L. schrenki* were recovered from 3 out of the 4 reedbuck. It has not been reported from South African ruminants since its description (Ortlepp, 1939), and it appears to be a rare parasite.

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