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PARASITES OF SOUTH AFRICAN WILDLIFE. XI. DESCRIPTION OF A NEW RACE OF *COOPERIA ROTUNDISPICULUM* GIBBONS & KHALIL, 1980

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ABSTRACT

BOOMKER, J., 1991. Parasites of South African wildlife. XI. Description of a new race of *Cooperia rotundispiculum* Gibbons & Khalil, 1980. *Onderstepoort Journal of Veterinary Research*, 58, 271–273 (1991).

During surveys of the helminths of South African wildlife, a *Cooperia* sp. that closely resembles *Cooperia rotundispiculum* Gibbons & Khalil, 1980, was recovered from several antelope species. This nematode has spicules 0,140–0,248 mm long and has 18–20 longitudinal cuticular ridges, whereas typical *C. rotundispiculum* has spicules 0,179–0,226 mm long and has 14 ridges. In view of the few differences between the 2 helminths, the *Cooperia* sp. is described here as a race of *C. rotundispiculum*.

INTRODUCTION

During ongoing surveys of the helminth parasites of South African wildlife numerous specimens of a *Cooperia* sp. that closely resembles *Cooperia rotundispiculum* Gibbons & Khalil, 1980, were recovered from the small intestines of several antelope species, mainly from the eastern part of the country. These worms are similar in all respects to typical *C. rotundispiculum* except for the number of longitudinal cuticular ridges and the length of the spicules. Since typical *C. rotundispiculum* has not yet been recorded from South African antelope, the worms collected during the surveys in this country are described here as a new race of *C. rotundispiculum*.

MATERIALS AND METHODS

The worms were fixed in 10 % formalin and cleared in lactophenol. The number and arrangement of the longitudinal cuticular ridges were studied by mounting hand-cut sections of the mid-body in hard glycerine jelly. All drawings were made with a Nikon Optiphot compound microscope with differential interference illumination and a Nikon drawing tube.

DESCRIPTION

Synonymy

Cooperia rotundispiculum of Boomker, Keep, Flamand & Horak, 1984 and Boomker, 1990.

Cooperia sp. of Boomker, Horak & De Vos, 1986 and Boomker, Keep & Horak, 1987.

Material examined

Tragelaphus angasii from the Umfolozi Game Reserve, Natal, 25 males, 24 females. Onderstepoort Helminthological Collection, No. T 2181 a.

Tragelaphus strepsiceros from the Andries Vosloo Kudu Reserve, eastern Cape Province, 9 males. Onderstepoort Helminthological Collection, No. T 2181 f.

Cephalophus natalensis from Charters Creek, St. Lucia Nature Reserve, Natal, 8 males. Onderstepoort Helminthological Collection, No. T 2181 b.

Cephalophus natalensis from Charters Creek, St. Lucia Nature Reserve, Natal, 9 males. Onderstepoort Helminthological Collection No. T 2181 c.

Taurotragus oryx from the Mountain Zebra National Park, eastern Cape Province, 7 males, 9 females. Onderstepoort Helminthological Collection, No. T 2181 d.

Taurotragus oryx, Mountain Zebra National Park, eastern Cape Province, 8 males, 6 females. Onderstepoort Helminthological Collection, No. T 2181 e.

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Additional material, consisting of numerous male and female worms from several host species have been deposited with the Commonwealth Institute of Parasitology, St. Albans, Herts, England.

Other recorded hosts

Cephalophus monticola from Queen Elizabeth Park, Pietermaritzburg, Natal.

Neotragus moschatus from Tembe National Elephant Park, northern Natal.

Oryx gazella from the Kalahari Gemsbok National Park, northern Cape Province.

Tragelaphus scriptus and *Tragelaphus angasii* from the Kruger National Park.

Tragelaphus scriptus and *Sylvicapra grimmia* from the Weza State Forest, Natal.

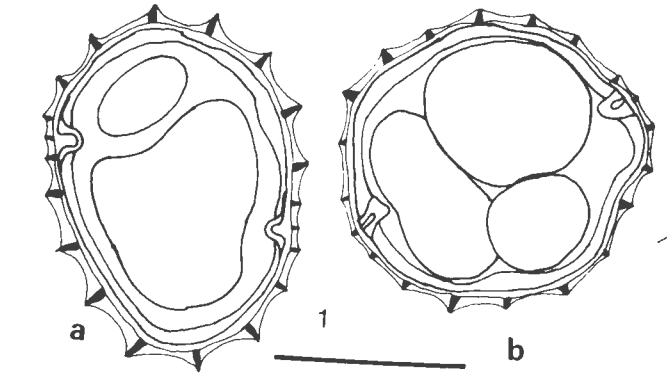
Aepyceros melampus from the St. Lucia Game Park, Lake St. Lucia area, Natal.

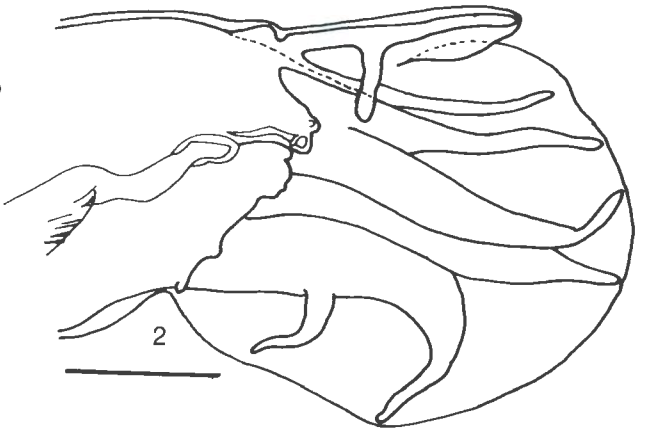
Description

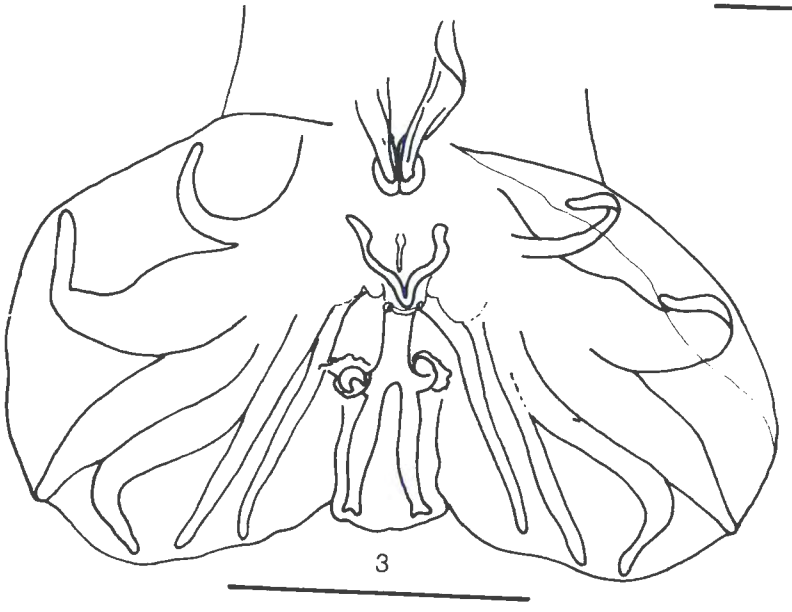
The principal measurements are listed in Table 1.

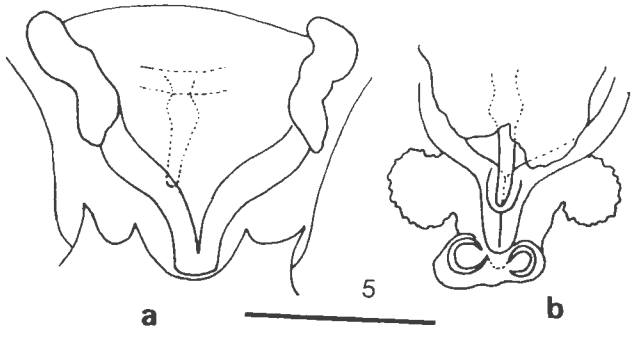
Small worms that are often spirally coiled. The cuticle bears 18–20 longitudinal cuticular ridges which are supported by sclerotized rods. The mouth is simple and a cephalic inflation is present. The oesophagus is cylindrical and is slightly wider distally. Small cervical papillae are present and they, as well as the excretory pore, are situated in front of, behind or at the level of the end of the oesophagus. The nerve ring could be seen in some specimens only. On cross-section at the mid-body, males have 18–20 cuticular ridges, of which the lateral 3 on each side are smaller than the rest; females have 20 ridges with the same configuration as those of the males (Fig. 1a & b).

The males have a bursa that is typical of the genus, with 2 large lateral lobes from which the dorsal lobe is distinctly demarcated (Fig. 2 & 3). The ventroventral ray is separate and widely divergent from the lateroventral ray, and is considerably thinner; both curve ventrally. The anterolateral and mediolateral rays run together for about ¾ of their lengths; the mediolateral then curves sharply posteriorly, while the anterolateral ray curves only slightly posteriorly, if at all. The posterolateral ray is separate from the other 2 lateral rays and is straight. All the ventral and lateral rays reach the bursal margin. The dorsal ray is moderately long and bifurcates approximately half-way along its length. Long ventrally directed branches at the bifurcation. The main branches assume the typical lyre-shape of the genus and end in bifid tips that do not reach the edge of the dorsal lobe. The externodorsal rays arise near the origin of the dorsal ray; they are slightly curved and do not reach the bursal margin (Fig. 2).









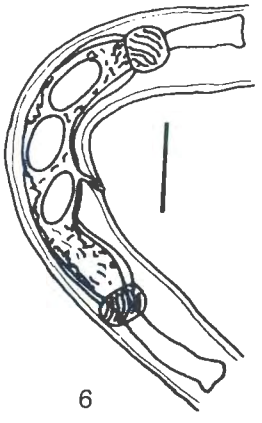


FIG. 1 Section through the mid-body of (a) a male from *Cephalophus natalensis* and (b) a female from *Taurotragus oryx*, showing the arrangement of the longitudinal cuticular ridges (Bar length = 0,05 mm)

FIG. 2 Male bursa, ventral view (from *Tragelaphus strepsiceros*) (Bar length = 0,1 mm)

FIG. 3 Male bursa, lateral view (from *Tragelaphus angasii*) (Bar length = 0,05 mm)

FIG. 4 Spicules, (a) lateral view (from *Taurotragus oryx*) and (b) ventral view, from *Tragelaphus angasii* (Bar length = 0,05 mm)

FIG. 5 The genital cone, (a) ventral and (b) dorsal views (from *Tragelaphus strepsiceros*) (Bar length = 0,025 mm)

FIG. 6 Vulvar region of a female from *Tragelaphus angasii* (Bar length = 0,1 mm)

TABLE 1 The principal measurements, in mm, of the new race of *Cooperia rotundispiculum* from different hosts

	Cephalophus natalensis	*Tragelaphus angasii*		*Tragelaphus strepsiceros*	*Taurotragus oryx*		Range, all antelope	
	Males	Males	Females	Males	Males	Females	Males	Females
Length	5,740–6,370	4,660–5,920	4,880–6,060	6,175–8,424	7,430–8,670	9,400–9,800	4,660–8,670	4,880–9,800
Width	0,046–0,104	0,072–0,104	0,060–0,100	0,070–0,080	0,120–0,160	0,124–0,168	0,046–0,160	0,060–0,168
Head width	0,018–0,036	0,022–0,032	0,025–0,036	0,030–0,035	0,032–0,036	0,028–0,044	0,018–0,036	0,025–0,044
Distance of excretory pore from anterior end	0,220–0,404	0,272–0,348	0,230–0,316	0,360–0,410	0,376–0,606	0,388–0,588	0,220–0,606	0,230–0,588
Distance of nerve ring from anterior end	0,218–0,286	0,190–0,234	0,196–0,228	Not seen	0,278–0,280	0,320	0,190–0,286	0,196–0,320
Distance of cervical papillae from anterior end	0,322–0,404	0,290–0,364	0,247–0,322	Not seen	0,460	0,408–0,456	0,290–0,460	0,247–0,456
Oesophagus length	0,356–0,436	0,300–0,384	0,308–0,385	0,390–0,450	0,392–0,554	0,432–0,632	0,300–0,554	0,308–0,632
Spicule length	0,148–0,176	0,140–0,176	–	0,145–0,195	0,184–0,248	–	0,140–0,248	–
Distance of pre-bursal papillae from posterior end	Not seen	0,160–0,164	–	Not seen	Not seen	–	0,160–0,164	–
Combined length of ovejectors and sphincters	–	–	0,266–0,468	–	–	0,512–0,924	–	0,266–0,924
Distance of vulva from tip of tail	–	–	0,875–1,380	–	–	1,780–2,568	–	0,875–2,568
Distance of vulva from anus	–	–	0,740–1,230	–	–	1,592–2,328	–	0,740–2,328
Distance of anus from tip of tail	–	–	0,125–0,168	–	–	0,160–0,488	–	0,125–0,488
Eggs *(in utero)*, length	–	–	0,070–0,090	–	–	0,064–0,112	–	0,070–0,112
width	–	–	0,035–0,048	–	–	0,048–0,068	–	0,035–0,068

The spicules are equal and well sclerotized. There is a pectinate expansion in the mid-region and the spicules end in slightly bent tips that are enclosed by transparent ovoid knobs (Fig. 4). The genital cone is complex (Fig. 5).

The females are larger than the males. The vulva is situated in the posterior third of the body and is a slightly protruding transverse slit. Vulvar flaps are absent. The ovejector is well-developed (Fig. 6) and the tail ends in an acute point. Eggs are ovoid to elongated and are segmented when laid.

DISCUSSION

C. rotundispiculum was described by Gibbons & Khalil (1980) from the small intestine of *Redunca redunca* from Kenya and Tanzania. The new race of *C. rotundispiculum* is closely related to typical *C. rotundispiculum* in all respects except for the number of longitudinal cuticular ridges (18–20 in the former and 14 in the latter) and the range of spicule lengths (0,140–0,248 mm in the former and 0,179–0,226 mm in the latter).

The above differences are sufficient to distinguish between the 2 helminths, but do not warrant the creation of a new species. The South African nematodes are therefore described here as a separate race of *C. rotundispiculum*; typical *C. rotundispiculum* has not yet been found in antelope in this country.

These nematodes have a wide distribution in South Africa, but have been recovered more often in hosts from the eastern parts of the country. They also seem to tolerate a wide range of vegetation types, and climatic conditions that vary from the arid semi-desert and Valley Bushveld in the northern and south-eastern Cape Province, respectively, to the sub-tropical localities around Lake St. Lucia in Natal.

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