

**PARACOOPERIA DEVOSSIN. SP. (NEMATODA: TRICHOSTRONGYLIDAE) FROM THE BUSHBUCK, TRAGELAPHUS SCRIPTUS (PALLAS, 1766)**

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ABSTRACT

BOOMKER, J. & KINGSLEY, SHIRLEY A., 1984. *Paracooperia devossi* n. sp. (Nematoda: Trichostrongylidae) from the bushbuck, *Tragelaphus scriptus* (Pallas, 1766). *Onderstepoort Journal of Veterinary Research*, 51, 21-24 (1984).

A new species of *Paracooperia* Travassos, 1935 was found in the small intestines of 4 bushbuck, *Tragelaphus scriptus* (Pallas, 1766), and 3 greater kudu, *Tragelaphus strepsiceros* (Pallas, 1766), all culled in the Kruger National Park. The nematodes appear to be widespread in the Park, since the bushbuck originated from Skukuza in the central part of the Park, 2 of the 3 kudu from near Malelane in the south and the remaining kudu from Pafuri in the extreme north.

The worms are named *Paracooperia devossi* after Dr V. de Vos of the Kruger National Park and can be differentiated from the closely related *Paracooperia tragelaphi* Gibbons & Khalil, 1980 by the single indistinct ridge on 1 of the branches of the spicules. Furthermore, the spicules end as fairly large ovoid knobs, and vulvar flaps are present in the females.

INTRODUCTION

During an ongoing survey of the parasites of the artiodactylids of the Kruger National Park, a new species of *Paracooperia* Travassos, 1935 was found in the small intestines of 3 male and 1 female bushbuck, *Tragelaphus scriptus* (Pallas, 1766), culled at Skukuza. The same species of nematodes were also recovered from 2 greater kudu, *Tragelaphus strepsiceros* (Pallas, 1766), shot near Malelane in the extreme south of the Park, as well as 1 kudu shot in Pafuri in the extreme north.

Only a few parasites were recovered from each animal. The bushbuck harboured 638, 611, 448 and 77 male and female worms respectively and 25, 27 and 78 males and females were recovered from the 2 kudu from Malelane and the 1 from Pafuri respectively. The type host selected was the bushbuck, since the numbers recovered from the kudu were too low for a detailed description.

The parasites are described here as *Paracooperia devossi* n. sp. after Dr V. de Vos of the Kruger National Park in recognition of his efforts for furthering the study of the parasites of wild animals in this country.

During the course of this study 1 syntype male and 1 syntype female of *Paracooperia tragelaphi* Gibbons & Khalil, 1980 were loaned from the Commonwealth Institute of Parasitology, England, for the purpose of comparison with *P. devossi*.

DIAGNOSIS OF THE SPECIES

*Trichostrongylidae: Cooperiinae:* Anterior end with a large cephalic vesicle; buccal capsule small, without teeth; cervical papillae small and difficult to see; well-

developed synophe. Males with a symmetrical bursa, dorsal lobe indistinct; spicules equal, relatively short, well sclerotized and complex; gubernaculum absent; genital cone relatively simple. Female didelphic, vulva in posterior half of the body; tail tapering to a more or less acute point.

Description of *Paracooperia devossi* n. sp.

Type host

*Tragelaphus scriptus* (Pallas, 1766), from Skukuza, Kruger National Park, Transvaal, Republic of South Africa.

Material examined

*T. scriptus* from the type locality, syntype specimens (Onderstepoort Helminthological Collection, No. T2164), 20 males and 7 females.

*T. scriptus* from the type locality, paratype specimens (Onderstepoort Helminthological Collection, No. T2163), 5 males and 5 females.

*T. scriptus* from the type locality, 2 animals, 4 male and 4 female worms.

*Tragelaphus strepsiceros* (Pallas, 1766) from near Malelane, Kruger National Park, 5 males.

*T. strepsiceros* from Pafuri, Kruger National Park, 1 male.

Description

The principal measurements are listed in Table 1.

Small worms that are often spirally coiled. A well-developed cephalic inflation is present. The mouth is surrounded by 3 small lips. The oesophagus has the

TABLE 1 The principal measurements of *Paracooperia devossi* n. sp.\*

	Males	Females
Length	3,97-5,1	4,78-6,72
Width	0,10-0,13	0,09-0,11
Head width	0,03-0,04	0,02-0,04
Length of cephalic inflation	0,02-0,03	0,02-0,03
Width of cephalic inflation	0,04-0,05	0,04-0,05
Distance of excretory pore from anterior end	0,20-0,28	0,19-0,29
Distance of nerve ring from anterior end	0,17-0,23	0,21-0,24
Distance of cervical papillae from anterior end	0,23-0,28	0,22-0,33
Oesophagus length	0,31-0,39	0,33-0,40
Spicule length	0,27-0,30	—
Combined length of ovijectors and sphincters	—	0,22-0,30
Distance of vulva from tip of tail	—	0,90-1,06
Distance of vulva from anus	—	0,78-0,89
Distance of anus from tip of tail	—	0,13-0,17
Combined length of vulvar flaps	—	0,34-0,54
Eggs ( <i>in utero</i> ) length	—	0,07-0,08
width	—	0,04-0,05

\* All measurements given in mm

usual cylindrical shape and is slightly thickened distally. The excretory pore is situated near the distal end of the oesophagus and the nerve ring is indistinct. Small cervical papillae are present, slightly distal to the excretory pore.

The male bursa has the typical shape of the genus, with 2 large lateral lobes and an indistinct symmetrical dorsal lobe. The anteroventral ray is slender, while the posteroventral ray is considerably thicker; both curve anteriorly. The lateral bursal rays diminish in size posteriorly; the anterolateral extends laterally or curves only slightly anteriorly, while the medio- and posterolateral rays curve posteriorly. The externodorsal rays arise from the base of the dorsal ray and almost reach the bursal margin. The dorsal ray bifurcates only at its distal end, each branch dividing again to form a slender outer branch and a short thicker and bifurcated inner branch (Fig. 1). Prebursal papillae were not seen.

The spicules are equal and complex and each consists of a main stem and 2 branches. The main stem ends in a more or less ovoid knob that has a distinct horizontal groove. One of the branches is more heavily sclerotized than the other and bears a single indistinct ridge that is only visible in lateral view. The tip of the ridge-bearing branch is recurved and appears hook-like. A poorly sclerotized filamentous appendage trails from its tip. The main stem and both branches are enclosed in well-developed membranous alae (Fig. 2 a-c). For comparative purposes the spicules of *P. tragelaphi* are illustrated in Fig. 2d. A gubernaculum is absent and the genital cone (Fig. 3) is relatively simple.

The females are larger than the males. The synlophe is similar to that of the other species of the genus. There are 10 ridges, of which the dorsolateral ones are large, the ventrolateral ones smaller and the dorsal and ventral ones even smaller (Fig. 4). The vulva is situated in the distal third of the body. A vulvar flap, consisting of pre- and postvulvar parts, is present (Fig. 5). The ovijector is well developed and the uterus is didelphic. The tail is short and ends in a sharp point. The eggs are thin-walled and, when laid, contain a morula.

#### DISCUSSION

In her recent revision of the genus *Paracooperia*, Gibbons (1978) recognizes only 5 valid species. Those with spicules less than 0,2 mm are *Paracooperia raphiceri* Ortlepp, 1939 and *Paracooperia mazabukae* Le Roux, 1950, and those with spicules more than 0,2 mm long are *Paracooperia nodulosa* (Schwartz, 1928), *Paracooperia serrata* (Mönnig, 1931) and *Paracooperia daubneyi* (Daubney, 1933). Subsequently, Gibbons & Khalil (1980) described *Paracooperia tragelaphi* with spicules longer than 0,2 mm, from a bushbuck.

*P. devossi* is similar to *P. tragelaphi* in so far as the principal measurements and the configuration of the spicules are concerned. It differs from *P. tragelaphi*, however, in that there is only 1 indistinct ridge on the spicules and the tips of the spicules end in ovoid knobs. The terminal hook seen on the ridge-bearing branch of the spicules of *P. devossi* was also seen in *P. tragelaphi*. This hook seems to be present only in the 2 *Paracooperia* species from the bushbuck and was not seen by us in

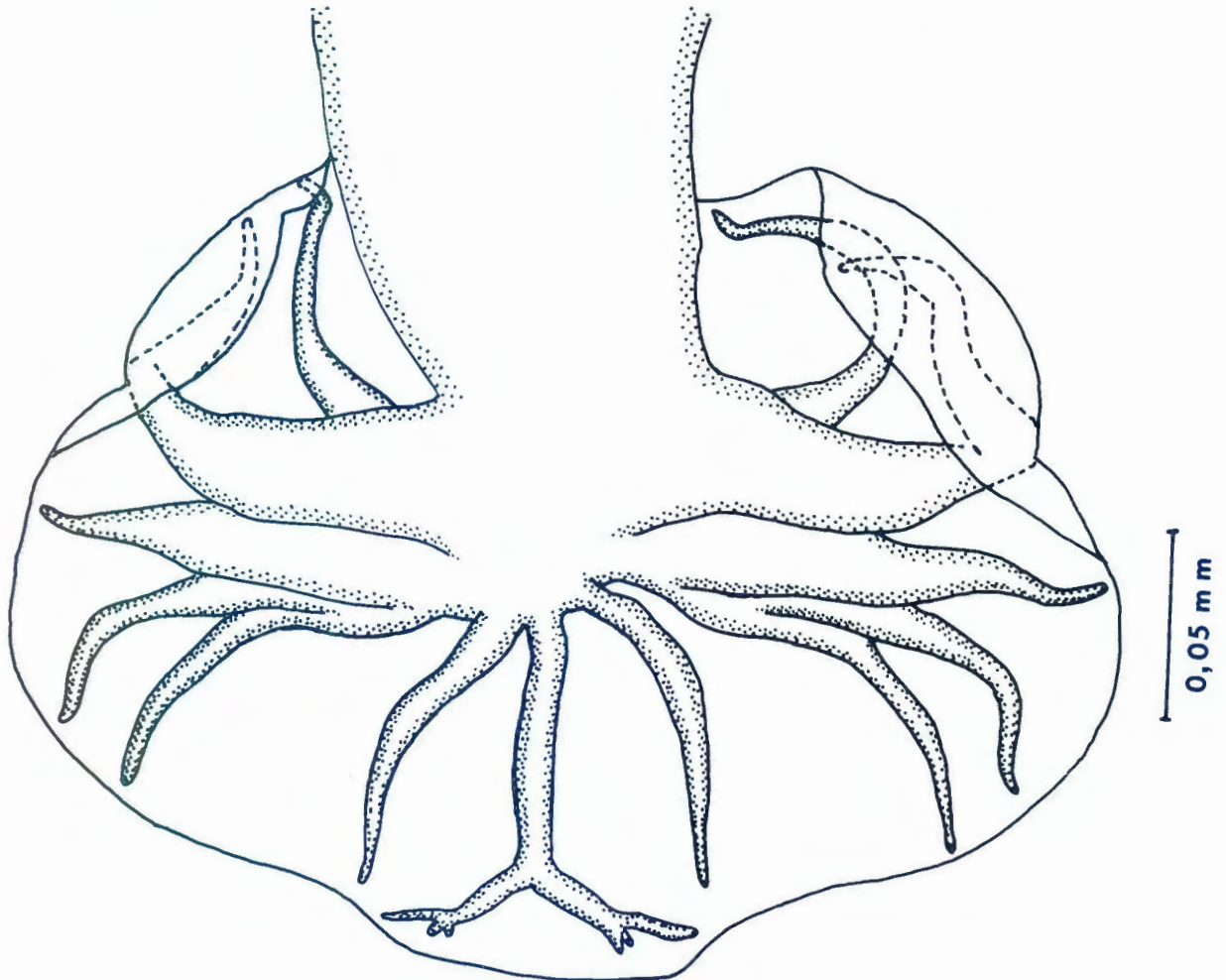


FIG. 1. Bursa of *P. devossi*, ventral view

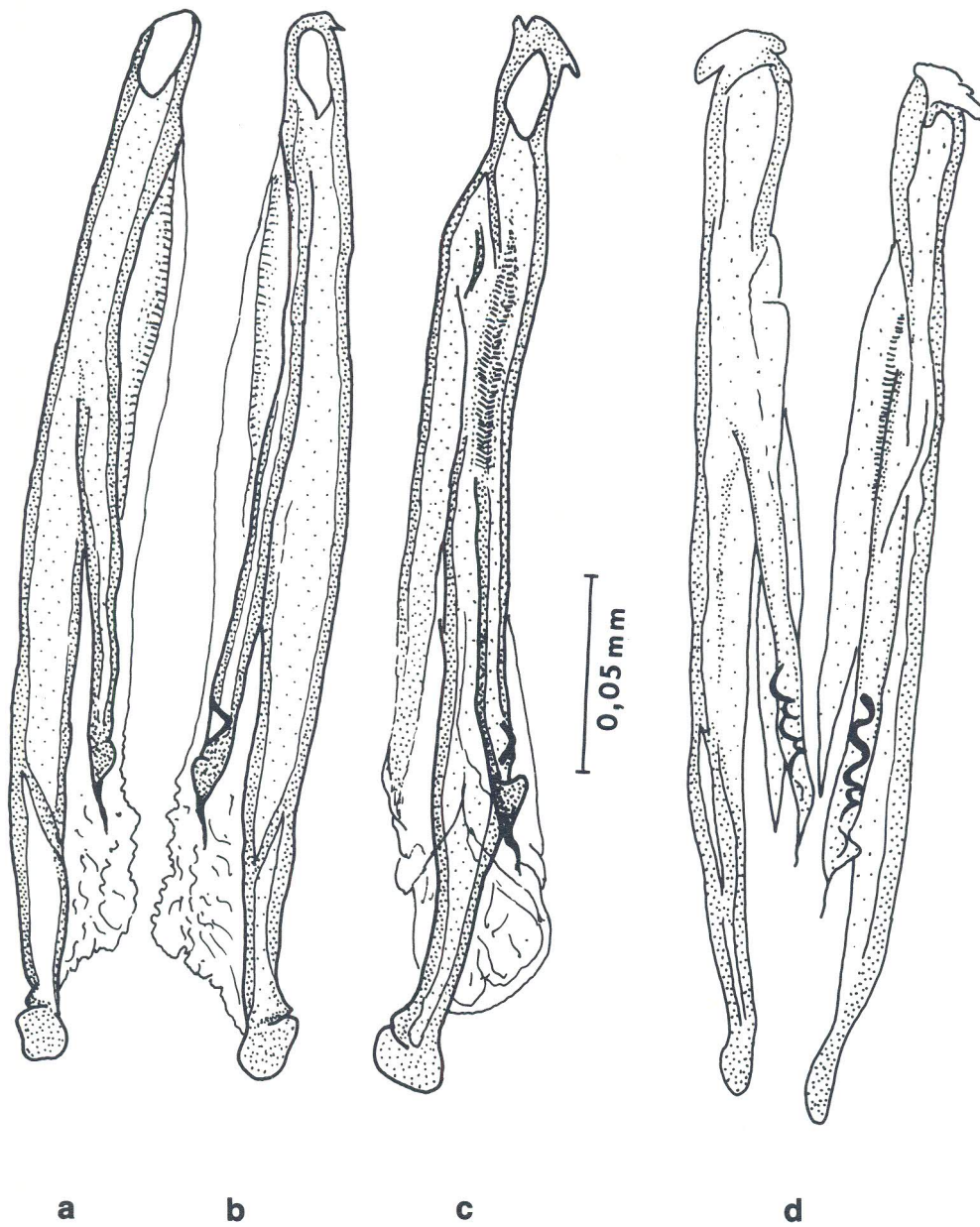


FIG. 2. The spicules of *P. devossi* from different angles (a-c) and those of *P. tragelaphi* (d)

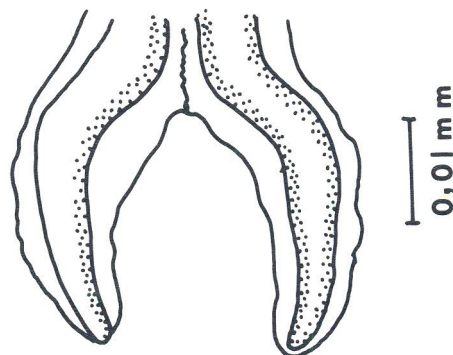


FIG. 3. The genital cone of *P. devossi*

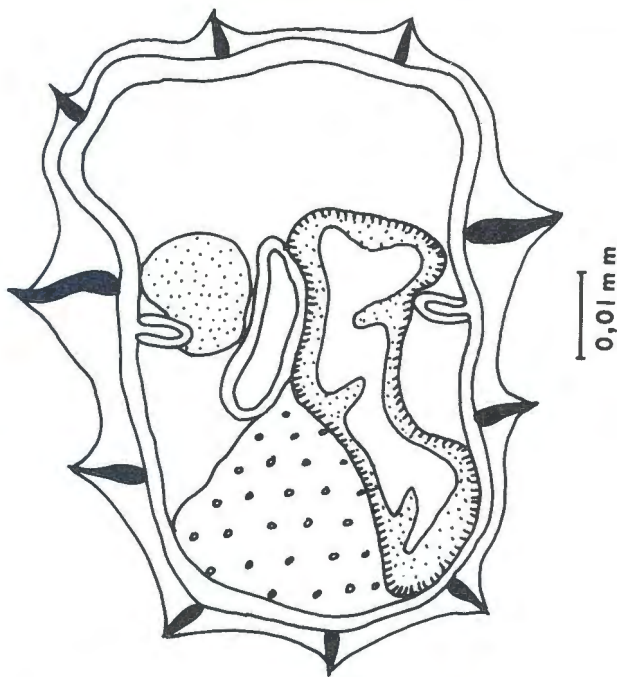


FIG. 4. The synopse of *P. devossi*

specimens of *P. raphiceri* and *P. serrata*, nor was it mentioned by Gibbons (1978). For comparative purposes, a spicule of *P. tragelaphi* is illustrated in Fig. 2d.

The females of *P. devossi* possess a vulvar flap, but this is lacking in the females of *P. tragelaphi*.

*P. devossi* appears to be a recent acquisition of bushbuck in the Kruger National Park. This is substantiated by the fact that only 3 out of the 11 bushbuck from Skukuza and 3 out of the 98 kudu from near Malelane that were examined for parasites over the past 5 years harboured the parasite (Boomker, unpublished data). An interesting observation is that the animals from which the parasites were collected were shot on the banks or in the immediate vicinity of 3 major rivers, which by themselves or as tributaries of other rivers flow east through Mozambique. They are the Levubu River in the north which flows into the Limpopo River, the Sabie River in the Central part and the Crocodile River in the south, which is the major tributary of the Incomati River. It is postulated that one of the tragelaphine species, probably bushbuck which prefer riverine forests migrated along these rivers from Mozambique into the Park. The spread of the parasite is expected to be slow, since browsers, because of their feeding habits, are not subject to the same levels of infestation as grazers (Boomker, Du Plessis & Boomker, 1983).

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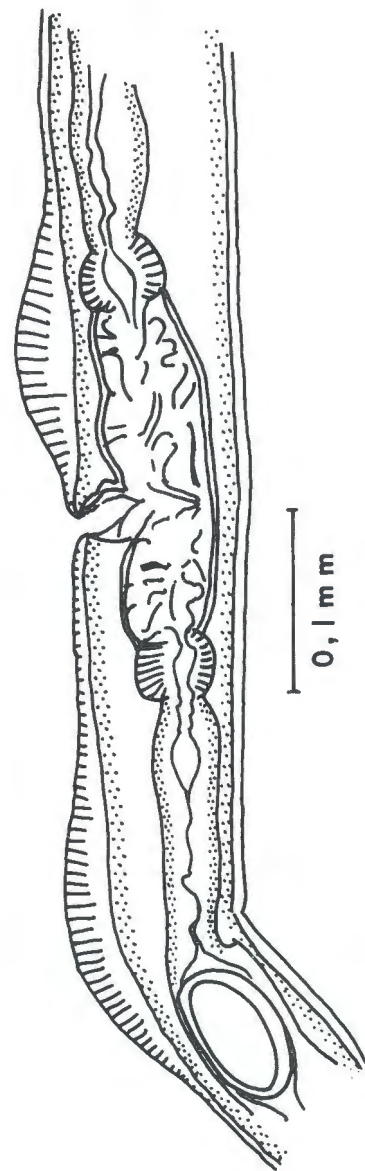


FIG. 5. The vulvar region of a female of *P. devossi*, lateral view

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