

**COOPERIA CONNOCHAETI SP. NOV. (NEMATODA, TRICHOSTRONGYLIDAE)  
FROM THE BLUE WILDEBEEST, CONNOCHAETES TAURINUS (BURCHELL, 1823)**

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ABSTRACT

BOOMKER, J., HORAK, I. G. & ALVES, REGINA, 1979. *Cooperia connochaeti* sp. nov. (Nematoda, Trichostrongylidae) from the blue wildebeest, *Connochaetes taurinus* (Burchell, 1823). *Onderstepoort Journal of Veterinary Research*, 46, 83-86 (1979).

A new species of nematode, *Cooperia connochaeti*, was collected from cross-bred blue and black wildebeest at Krugersdorp (Transvaal), blue wildebeest *Connochaetes taurinus* (Burchell, 1823) from the Kruger National Park (Transvaal) and Lake Xhau (Botswana), as well as from impala *Aepyceros melampus* (Lichtenstein, 1812) at Malelane (Transvaal) and Pafuri (Kruger National Park).

These nematodes are smaller than *Cooperia pectinata* Ransom, 1907, and their spicules, which are bifid in the distal third, are shorter (145-166  $\mu\text{m}$ ) than those of *C. pectinata* (240-280  $\mu\text{m}$ ). In addition, the lateral branches of the dorsal ray of *C. connochaeti* are directed ventrally and slightly anteriorly, while those of *C. pectinata* are directed posteriorly.

Résumé

COOPERIA CONNOCHAETI SP. NOV. (NEMATODA, TRICHOSTRONGYLIDAE), PARASITE DU GNOU BLEU CONNOCHAETES TAURINUS (BURCHELL, 1823)

On a récolté une nouvelle espèce de nématode, *Cooperia connochaeti*, chez des hybrides de gnous bleus et noirs à Krugersdorp (Transvaal), chez le gnou bleu *Connochaetes taurinus* (Burchell, 1823) au Parc National Kruger (Transvaal) et au lac Xhau (Botswana), ainsi que chez l'impala *Aepyceros melampus* (Lichtenstein, 1812) à Malelane (Transvaal) et à Pafuri (Parc National Kruger).

Ces nématodes sont plus petits que *Cooperia pectinata* Ransom, 1907, et leurs spicules, bifides au tiers distal, sont plus courts (145-166  $\mu\text{m}$ ) que ceux de *C. pectinata* (240-280  $\mu\text{m}$ ). En plus, les branches latérales de la raie dorsale de *C. connochaeti* sont dirigées ventralement et légèrement vers l'avant, tandis que celles de *C. pectinata* sont dirigées vers l'arrière.

INTRODUCTION

During an anthelmintic test conducted in a private game park near Krugersdorp, Transvaal, nematodes of the genus *Cooperia* Ransom, 1907 were found in the small intestine of 17 of 18 cross-bred blue and black wildebeest (*Connochaetes taurinus*  $\times$  *Connochaetes gnou*). Identical nematodes were found in 7 of 8 blue wildebeest, *Connochaetes taurinus* (Burchell, 1823), in the Kruger National Park and 1 of 7 from Lake Xhau, Botswana, as well as in impala, *Aepyceros melampus* (Lichtenstein, 1812), from Malelane, Transvaal and Pafuri, Kruger National Park.

The parasites were never present in vast numbers, 1 771 worms from a single animal at Krugersdorp and 1 256 from an animal in the Kruger National Park being the maximum numbers collected. With few exceptions they were the only nematodes present in the small intestine (Horak, unpublished data).

As these nematodes could not be assigned to any of the known species of *Cooperia*, they are described as *Cooperia connochaeti* sp. nov. The type host selected was *C. taurinus* from the Kruger National Park, since the wildebeest at Krugersdorp were hybrids.

DIAGNOSIS OF THE SPECIES

*Trichostrongylidae, Trichostrongylinae*: Anterior end with a cuticular dilatation, buccal capsule vestigial; cervical papillae absent; 12-16 longitudinal ridges on body. Male with a symmetrical bursa; dorsal lobe distinct; spicules relatively short, thick and complex; gubernaculum absent. Female didelphic; vulva in posterior half of body; tail tapering to a more or less acute point.

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Description of *Cooperia connochaeti* sp. nov.

Type host

*Connochaetes taurinus* (Burchell, 1823) from the Kruger National Park.

Material examined

*C. taurinus*, Kruger National Park, type specimens (Onderstepoort Helminthological Collection, No. 2153), 12 males and 12 females.

*C. taurinus*, Lake Xhau, Botswana, 5 males, 5 females.

*Connochaetes* hybrids, Krugersdorp, Transvaal, 6 males, 6 females.

*A. melampus*, Malelane, Transvaal, 3 males, 4 females.

*A. melampus*, Pafuri, Transvaal, 6 males, 6 females.

Paratypes, 12 males and 12 females from blue wildebeest from the type locality, have been deposited in the Onderstepoort Helminthological Collection (No. 2154).

Description

The principal measurements are listed in Table 1.

Small worms of which the anterior end of the body is spirally coiled. The cuticle bears 12-14 longitudinal striations which begin approximately 100-135  $\mu\text{m}$  from the anterior end and are supported by sclerotized rods. The supporting rods are larger and more strongly developed dorsally. There is a cephalic inflation which extends further dorsally than ventrally (Fig. 1). The measurements of the length of the cephalic inflation, as given in Table 1, are those of the longer dorsal portion.



TABLE 1 The principal measurements of *Cooperia connochaeti* sp. nov.\*

Host locality	<i>C. taurinus</i> Kruger National Park (Type specimens)		<i>Connochaetes</i> hybrids Krugersdorp		<i>C. taurinus</i> Botswana	
	♂	♀	♂	♀	♂	♀
Length (mm).....	4,4-5,1	5,9-7,1	5,0-5,8	6,2-7,9	4,4-5,1	5,1-7,2
Width.....	96,2-114,4	80,6-106,6	113-118	114,4-127,4	96,2-111,8	88,4-101,9
Head width.....	26-31,2	26-33,8	26-33,8	28,6-33,8	26-28,6	28,6-31,2
Cephalic inflation:						
Length.....	91-130	96,2-132,6	119,6-130	106-143	98,8-106,6	98,8-122,2
Width.....	28,6-46,8	44,1-57,2	39-49,4	44,2-49,4	36,4-39	36,4-39
Oesophagus.....	275,6-338	322,4-378,8	317-348,2	351-364	286-314	304-379
Nerve ring.....	208-260	221-293	205,4-273	241,8-273	208-221	218-241
Excretory pore.....	260-350	345-410	348,4-361,4	369-405,6	286-325	365-404,2
Bursa:						
Length closed.....	130-176,8	—	144,2-176	—	143-172,4	—
Width.....	117-169	—	175-185,4	—	143-166,4	—
Dorsal ray.....	91-109,2	—	91-104	—	104-130	—
Spicules.....	145-166,4	—	153-166,4	—	156-163,8	—
Tail to vulva.....	—	1 359,6-1 658,3	—	1 503,8-1 792,2	—	1 336-1 648
Tail to anus.....	—	123,6-169	—	144,4-164,8	—	130-176,8
Anus to vulva.....	—	1 190,6-1 534,7	—	1 339-1 647,8	—	1 159,2-1 518
Ovijector.....	—	309-473,8	—	364-416	—	391-432,6
Eggs:						
Length.....	—	56-72,8	—	65-72,8	—	54,6-70,8
Width.....	—	31,2-39	—	36,4-49,4	—	28,8-31,2

\* All measurements given in  $\mu\text{m}$  unless stated otherwise

The mouth is surrounded by 3 small lips, each of which bears a small papilla. A pair of phasmids is also present (Fig. 1). The oesophagus has the usual cylindrical shape and is slightly thickened distally. The nerve ring is fairly distinct. The excretory pore may be situated either anterior to, at the end of, or posterior to the end of the oesophagus.

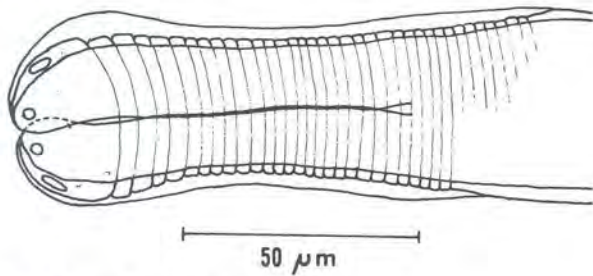


FIG. 1 Head, lateral view

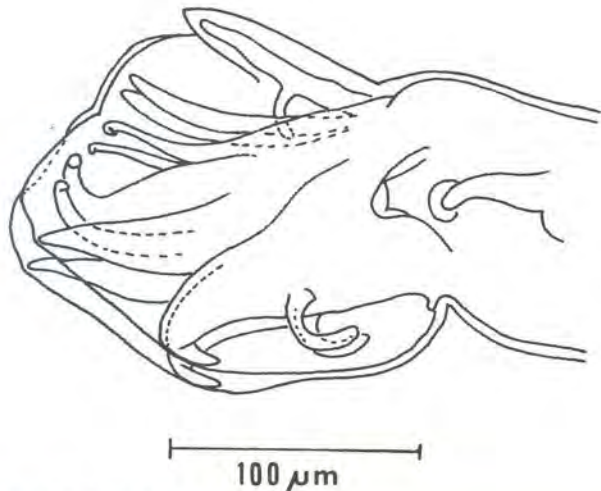


FIG. 2 Male bursa, lateral view

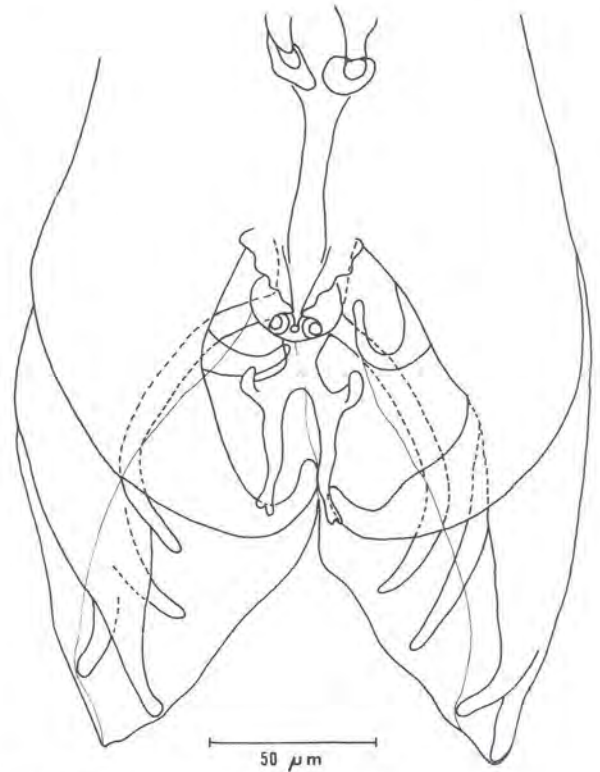


FIG. 3 Male bursa, ventral view

The males are 4,4-5,8 mm long. The bursa has the compact appearance of the genus, with 2 small lateral lobes from which the dorsal lobe is distinctly demarcated (Fig. 2). The ventro-ventral and latero-ventral rays are well separated, the latter being considerably larger than the former. Both rays curve anteriorly. Of the lateral rays, the antero-laterals are the largest, curve slightly inward and reach the margin of the bursa. The medio-lateral rays diverge from the antero-laterals and curve slightly inward and dorsally. The postero-lateral rays are slender and curve dorsally

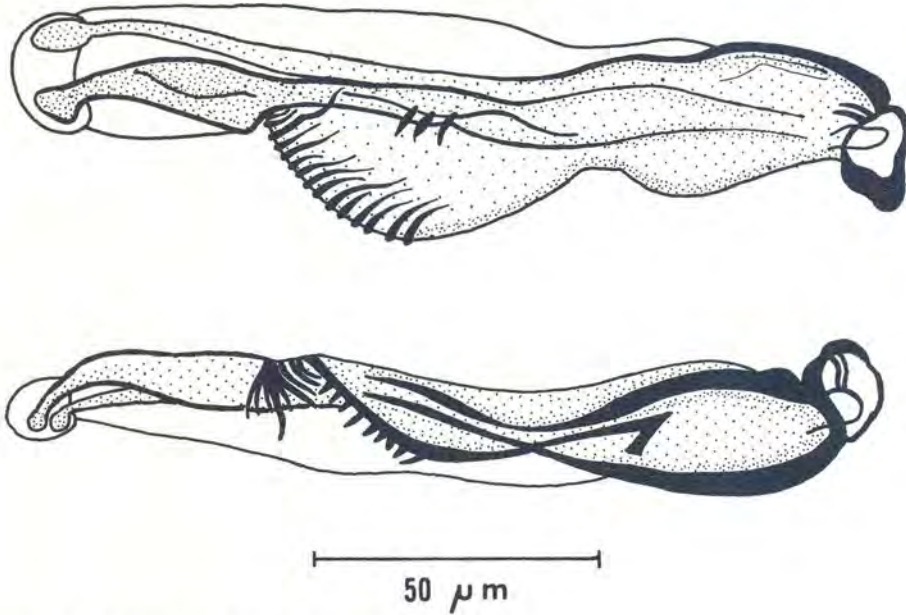


FIG. 4 Spicules; top lateral view, bottom ventral view

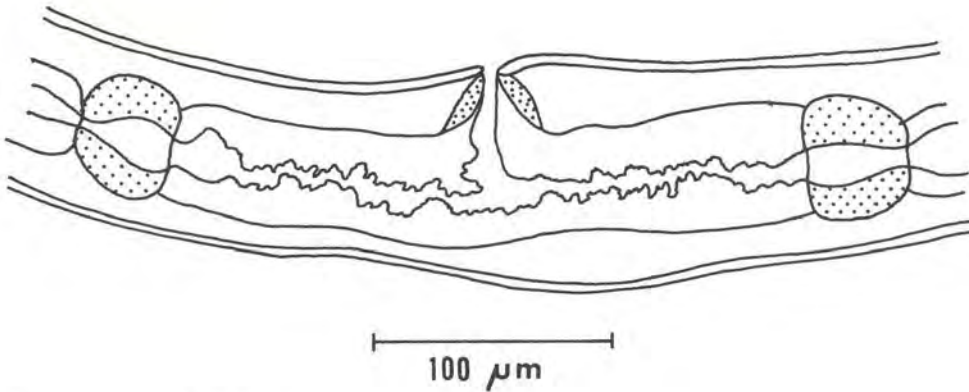


FIG. 5 Ovijector, lateral view

(Fig. 2). The dorsal ray is stout and the posterior third is divided into 2 branches. Ventrally directed branches arise posteriorly to the bifurcation of the main branch. The main branches, which together assume the typical lyre-shape of the genus, end in bifid tips, which are of equal thickness, but which may differ in length. The externo-dorsal rays arise from the middle of the main trunk of the dorsal ray. They are slender and have the characteristic shape of the genus (Fig. 3).

The spicules (Fig. 4) are equal and well sclerotized. The middle third of each has a pectinate expansion, followed by a depression into which the corrugations extend. The distal third of the spicule consists of 2 slender, slightly curved spurs, each terminating in a small, ovoid, non-sclerotized knob. Membranous alae are present. They extend from the pectinate expansion medially to enclose the 2 spurs of the spicules, and laterally to enclose the distal five sixths of the spicule. There is no gubernaculum.

The females are 5,0–7,9 mm long, and 80,6–127,4  $\mu\text{m}$  wide across the vulva. The vulva is a slightly protruding transverse slit on the ventral aspect of the body, and is usually flanked by a pair of small lateral alae. The longitudinal striations are interrupted in the

vulvar region, but are continuous dorsally. The ovijectors are well developed (Fig. 5). The tail is moderately long and ends acutely (Fig. 6). Eggs are ovoid to elongated.

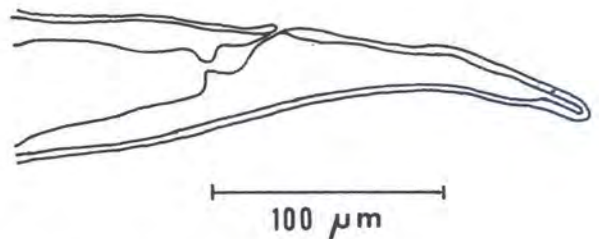


FIG. 6 Tail of female, lateral view

#### DISCUSSION

The various *Cooperia* species may be divided into 2 groups. The first group, in which the lateral branches of the distal part of the dorsal ray arise anteriorly to, or at the bifurcation, includes *C. africana* Mönnig, 1933, *C. curticei* (Giles, 1892) Ransom, 1907, *C. minor*



Gutteres, 1947, *C. neitzi* Mönnig, 1933, *C. punctata* (von Linstow, 1907) Ransom, 1907, and *C. spatulata* Baylis, 1938.

In the second group the lateral branches of the distal part of the dorsal ray arise posteriorly to the bifurcation. The species included in this group are *C. borgesii* Gutteres, 1947, *C. fuelleborni* Hung, 1926, *C. hippotragusi* Gutteres, 1947, *C. hungi* Mönnig, 1931, *C. mcmasteri* Gordon, 1932, *C. oncophora* (Railliet, 1898) Ransom, 1907, *C. pectinata* Ransom, 1907, *C. redunca* Gutteres, 1947, *C. verrucosa* Mönnig, 1933, *C. yoshidai* Mönnig, 1939, as well as *C. connochaeti*. The spicules of *C. connochaeti* resemble those of *C. pectinata* in shape but are smaller, (viz., 145–166  $\mu\text{m}$  in *C. connochaeti* and 240–250  $\mu\text{m}$  in *C. pectinata*) and are bifid in their distal third. The lateral branches of the dorsal ray of *C. connochaeti* are directed ventrally and slightly anteriorly, while those of *C. pectinata* are directed posteriorly.

Additional material from impala was examined and it was found that the measurements of these worms fall within the range given for the type specimens from the type host.

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