

STUDIES ON THE PARASITES OF ZEBRA. II. *CYLCOSTEPHANUS LONGICONUS* N. SP. (NEMATODA: STRONGYLIDAE) FROM THE MOUNTAIN ZEBRA, *EQUUS ZEBRA HARTMANNAE* (MATSCHIE, 1898)

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ABSTRACT

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A new species of nematode, *Cylicostephanus longiconus*, was collected from mountain zebra, *Equus zebra hartmannae* (Matschie, 1898), on the Kelpie farm in the Khomas Hochland, South West Africa/Namibia.

These nematodes have 1 large dorsal and 2 small subventral teeth in the oesophageal funnel and submedian papillae with very long tips. The males have a very well-developed dermal collar and genital cone.

INTRODUCTION

Twelve mountain zebra, *Equus zebra hartmannae* (Matschie, 1898), culled in South West Africa/Namibia, harboured from 2-4 500 adult *Cylicostephanus*, predominantly in the ventral colon.

These helminths belong to the genus *Cylicostephanus*, as defined by Lichtenfels (1975), and since they cannot be assigned to a known species, they are designated *Cylicostephanus longiconus* n. sp. because of their very elongated cylindrical genital cone.

Description of *Cylicostephanus longiconus* n. sp.

Type host

Equus zebra hartmannae (Matschie, 1898) from the Kelpie farm, (22°43' S, 16°43' E), South West Africa/Namibia.

Material examined

A total of 20 male and 20 female nematodes were examined in detail and, subsequently, 10 male and 10 female were dissected to determine the number of elements of external and internal leaf-crowns. The remaining 10 intact males and 10 intact females have been deposited in the Onderstepoort Helminthological Collection (No. T 2161 and T 2162).

Description

The principal measurements are listed in Table 1.

The worms are of medium size, and slender. The mouth collar is high, lateral papillae inconspicuous and submedian papillae prominent with very long tips. The walls of the buccal capsule are wider anteriorly than posteriorly (Fig. 1). The external leaf-crown consists of 13-16 elements which are long and petal-like, while the internal leaf-crown consists of 19-23 elements which are short and rounded. These originate posterior to the anterior margin of the buccal capsule wall (Fig. 2. a,b). When viewed dorsally, the dorsal gutter is higher than the dorsal tooth (Fig. 3). The oesophageal funnel is well-developed and sclerotized, with 1 large dorsal tooth and 2 smaller subventral teeth. The oesophagus is long, the nerve ring distinct and situated in the middle of the oesophagus. The excretory pore is immediately posterior to the cervical papillae, from 232-471 μm from the base of the buccal capsule.

The dorsal lobe of the male bursa is of moderate length (Fig. 4). The dorsal ray is divided throughout its length and about halfway along its length it gives rise to an accessory branch which is bifid, distally. The externodorsal ray is thicker than the lateral and ventral rays. The posterolateral arises separately while the medio- and externolaterals originate together. The mediolateral is longer than the postero- and externolaterals. The ventral rays are fused together for most of their length but are separate at their tips. The genital cone and dermal collar of the bursa are well-developed, both being very long

TABLE 1 Principal measurements of 20 males and 20 females of *Cylicostephanus longiconus* n. sp. (all measurements in μm, unless otherwise stated)

	Male			Female		
	Range	$\bar{X}^{(1)}$	S.D. ⁽²⁾	Range	$\bar{X}^{(1)}$	S.D. ⁽²⁾
Total length (mm)	8.19-10.4	9.19	± 0.72	8.2-12.6	9.92	± 1.27
Width	324-468	388.8	± 29.43	432-612	507.6	± 46.94
Head width	85-116	100.4	± 26.7	108-162	132	± 16.31
Buccal capsule: Depth	18-21	19.5	± 1.53	43-62	53.8	± 2.96
Width	42-50	43.7	± 1.89	18-28	21.6	± 3.82
No. of elements: External leaf-crown*	13-16	14.6	± 0.97	13-16	14.1	± 1.10
Internal leaf-crown*	20-23	21.1	± 1.33	19-23	21.2	± 1.32
Oesophagus: Length	396-507	441.6	± 27.18	486-628	517	± 37.54
Width	126-162	136.8	± 10.29	142-198	163	± 16.92
Distance of excretory pore from base of buccal capsule	232-379	315	± 36.0	265-471	347	± 47.5
Dorsal ray: Length	428-571	490	± 49.96	—	—	—
Genital cone: Length	270-594	392	± 80.12	—	—	—
Width	100-228	142	± 35.6	—	—	—
Spicule length (mm)	0.99-1.26	1.11	± 0.07	—	—	—
Distance from anus to tip of tail	—	—	—	107-198	149	± 20.26
Distance from vulva to tip of tail	—	—	—	214-378	285	± 46.98
Egg: Length	—	—	—	107-128	115	± 7.49
Width	—	—	—	42-64	53	± 7.07

* Counted in 10 males and 10 females

⁽¹⁾ \bar{X} = Mean

⁽²⁾ S. D. = Standard deviation

and cylindrical in shape (Fig. 5). Located on each side of the tip of the genital cone are rounded, semicircular appendages. The spicules are equal in length with pick-shaped tips.

The female tail tapers to a point with a slight ventral prominence (Fig. 6). The distance of the anus and the vulva from the tip of the tail is 107–198 μm and 214–378 μm respectively. The vagina is moderate in length, the ovejectors being paired. The pars ejectrix has a powerful sphincter and is approximately equal in

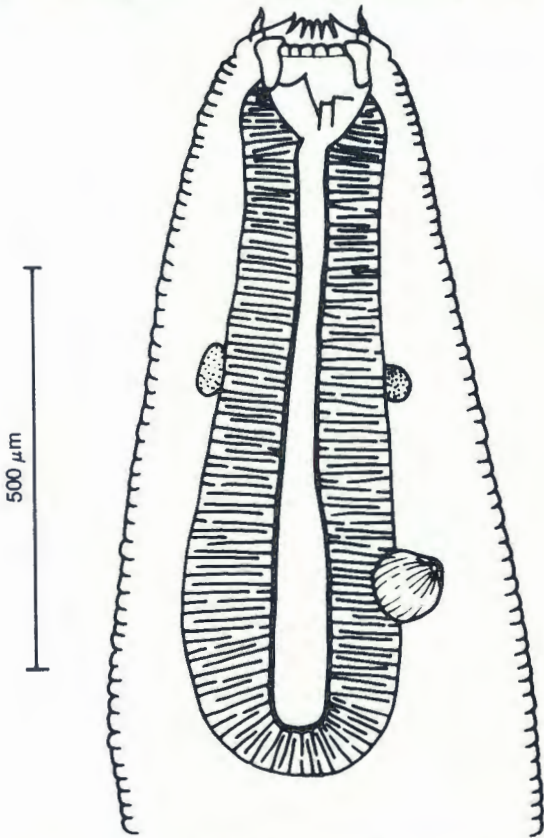


FIG. 1 Anterior extremity of *Cylicostephanus longiconus*, medio-lateral view

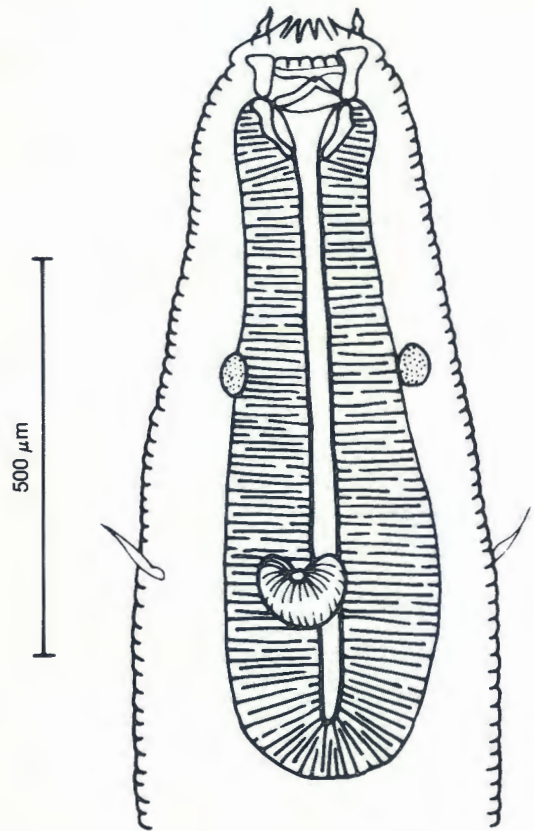


FIG. 3 Anterior extremity of *Cylicostephanus longiconus*, dorsal view

length to the pars haustrix which contains the greatest numbers of eggs (Fig. 7). The eggs are large, measuring 107–128 μm long and 42–64 μm wide.

DISCUSSION

The species of *Cylicostephanus* are: *C. calicatus* Looss, 1900; *C. poculatus* Looss, 1900; *C. minutus* Yorke & Macfie, 1918; *C. longibursatus* Yorke & Macfie, 1918; *C. asymmetricus* Theiler, 1923; *C. bidentatus*, Ihle, 1925; *C. hybridus* Kotlán, 1920; *C. goldi* Boulenger, 1917; *C. ornatus* Kotlán, 1919; and *C. skrjabini* Erschow, 1930.

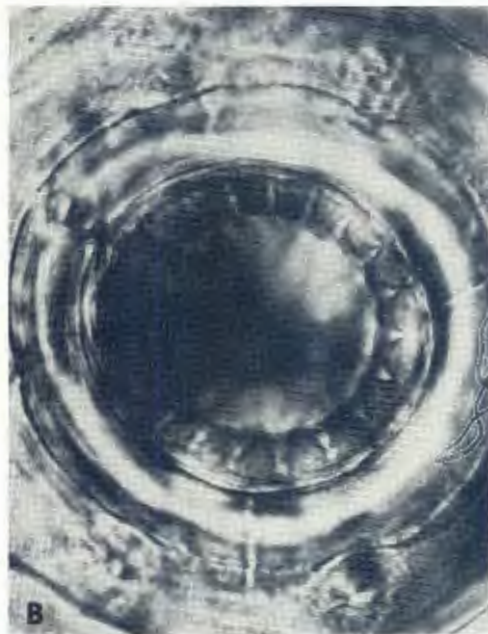


FIG. 2a En face view of *Cylicostephanus longiconus*, elements of external leaf-crown: HE \times 400
 2b En face view of *Cylicostephanus longiconus*, elements of internal leaf-crown: HE \times 400

while those of *C. longiconus* are longer and more slender. In *C. bidentatus* there are 1 small dorsal tooth and 2 small subventral teeth.

This new species is characterized by:

(1) the long, well-developed genital cone, (2) the position of the teeth in the oesophageal funnel and (3) the very long tips of the submedian papillae.

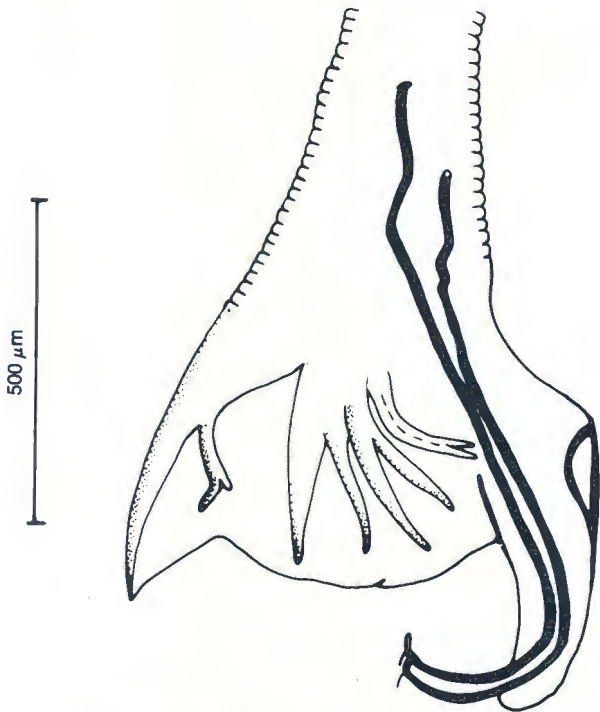


FIG. 4 Posterior extremity of *Cyclostephanus longiconus* (male), lateral view

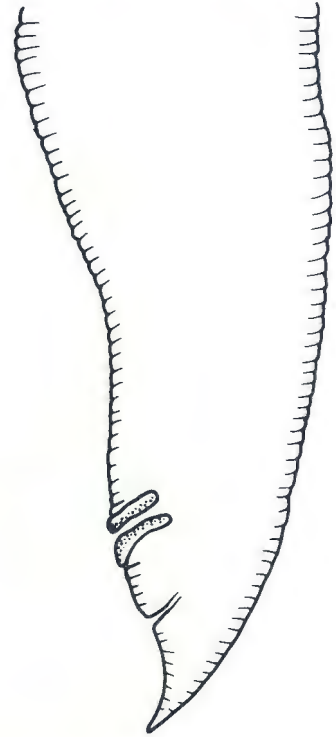


FIG. 6 Posterior extremity of *Cyclostephanus longiconus* (female)

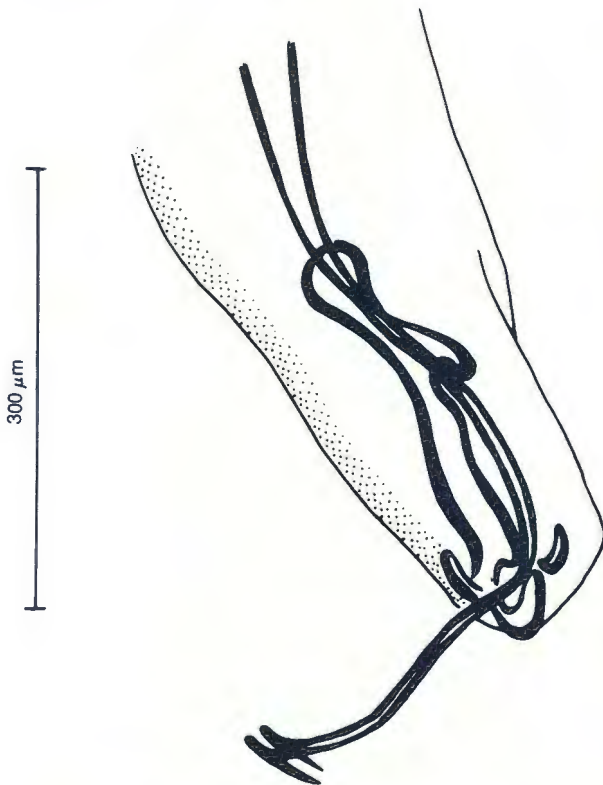


FIG. 5 *Cyclostephanus longiconus*, genital cone of male

C. longiconus differs from *C. bidentatus*, *C. goldi*, *C. asymmetricus* and *C. longibursatus* in having a long and well-developed genital cone, 3 teeth in the oesophageal funnel and the very long tips of the submedian papillae. It may be differentiated from *C. bidentatus* by the shape of the walls of the buccal capsule and the presence of teeth in the oesophageal funnel. The walls of the buccal capsule of *C. bidentatus* are short and thick anteriorly,



FIG. 7 Genital tract of *Cyclostephanus longiconus* (female)

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REFERENCES

- BOULENGER, C. L., 1917. Sclerostome parasites of the horse in England. II. New species of the genus *Cylicostomum*. *Parasitology*, 9, 203-212.
- BRUSCHOW, W. S., 1930. *Trichonema skrjabini* n. sp. Eine neue Nematodenart bei dem Pferde. *Deutsche Tierärztliche Wochenschrift*, 38, 277-279.
- IHLE, J. E. W., 1925. Verzeichnis der *Cylicostomum*-Arten der Equiden, mit Bemerkungen über einzelne Spezies. *Zentralblatt für Bakteriologie, Parasitenkunde und Infektions-Krankheiten*, 95, 227-236.
- KOTLÁN, S., 1919. A hazai lovokban előforduló Sclerostomidák, Különös tekintettel a *Cylicostomum*-genusra: Die in ungarischen Pferden vorkommenden Sclerostomiden mit besonderer Rücksicht auf das Genus *Cylicostomum*. *Közlemények az összehasonlító élet-és Kórtan Köreiből*, 15, 81-96 (Reprint pp. 1-19).
- KOTLÁN, S., 1920a. Adatok a lovokban, eloskódo strongylidák ismeretéhez. Néhány új *Cylicostomum*-faj lovak vastagbéléből. *Allatorvosi Lapok*, 43 (11-12), p. 71.
- KOTLÁN, S., 1920b. Adatok a lovokban, eloskódo strongylidák ismeretéhez. Néhány új *Cylicostomum*-faj lovak vastagbéléből. *Allatorvosi Lapok*, 43 (13-14), 85-86.
- LICHTENFELS, J. R., 1975. Helminths of domestic equids. Illustrated keys to genera and species with emphasis on North American forms. *Proceedings of the Helminthological Society of Washington*, 42, Special issue p. 92.
- LOOSS, A., 1900a. Notizen zur Helminthologie Egyptens. III. Die Sclerostomen der Pferde und Esel in Egypten. *Zentralblatt für Bakteriologie, Parasitenkunde und Infektions-Krankheiten*, 27, 150-160.
- LOOSS, A., 1900b. Notizen zur Helminthologie Egyptens. III. Die Sclerostomen der Pferde und Esel in Egypten. *Zentralblatt für Bakteriologie, Parasitenkunde und Infektions-Krankheiten*, 27, 184-192.
- THEILER, GERTRUD, 1923. The strongylid and other nematodes parasitic in the intestinal tract of South African equines. *Report of the Director of Veterinary Education and Research, Union of South Africa*, 9/10, 601-773.
- YORKE, W. & MACFIE, J. W. S., 1918. Strongylidae in horses. II. *Cylicostomum minutum* sp. n. *Annals of Tropical Medicine & Parasitology*, 11, 405-409.