

STUDIES ON THE PARASITES OF ZEBRAS 1. NEMATODES OF THE BURCHELL'S ZEBRA IN THE KRUGER NATIONAL PARK

ROSINA C. SCIALDO-KRECEK, Department of Parasitology, Faculty of Veterinary Science, University of Pretoria, P.O. Box 12580, Onderstepoort 0110

ABSTRACT

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Nineteen species of gastro-intestinal nematodes were recovered from 10 Burchell's zebra. These include: *Cyathostomum alveatum*, *C. montgomeryi* and *C. tetracanthum*; *Cylicocyclus auriculatus*, *C. gyalcephaloides*, *C. insigne* and *C. triramosus*; *Cylicodontophorus schürmanni* and *Cylicodontophorus* n.sp., *Cylicostephanus bidentatus*, *C. calicatus* and *C. minutus*; *Poteriostomum ratzii*, *Craterostomum acuticaudatum*, *Triodontophorus minor*, *Habronema majus*, *H. muscae*, *H. zebrae*, and *Draschia megastoma*, as well as *Cylindropharynx* spp. The highest burdens encountered were those of *Cylicocyclus triramosus* (159 491), *Cylindropharynx* (19 875), *Cylicocyclus auriculatus* (15 792), *Cylicostephanus calicatus* (16 658) and *Cyathostomum tetracanthum* (13 723). The nematodes consistently present in all zebras were: *Cylicostephanus calicatus*, *Cylindropharynx* spp. and *Draschia megastoma*.

INTRODUCTION

In 1909, Leiper recorded the first nematodes from zebras as well as the first nematode from Burchell's zebra, viz, *Strongylus vulgaris*. Theiler's (1923) study of the nematodes of equines included nematodes collected at post-mortem from 3 zebras. Prior to Theiler's study (Boulenger, 1920; Turner, 1920; Vevers, 1920; Yorke & Macfie, 1920) and the studies of others listed by Round (1968), records of nematodes from zebras consisted of isolated reports. In 1978, the opportunity presented itself of studying the helminths of zebra in greater detail, and particular attention was given to worm burdens, seasonal prevalence and life cycle studies. Scialdo, Reinecke & De Vos (1982) reported on the seasonal prevalence of the helminths. This paper deals with the specific identification of the helminths.

MATERIALS AND METHODS

The study area as well as the method of collection of nematodes from the 10 zebras was described by Scialdo *et al.* (1982).

The descriptions used for the identification of the specimens are compiled in Table 1.

RESULTS

Nine genera of nematodes in the families Strongylidae and Spiruridae were identified to specific level. The presence of these 18 species in the caecum, ventral or dorsal colon in the 4 colts and 6 stallions examined is indicated in Table 2, while the total worm burdens, number of zebras positive and range of these species are recorded in Table 3.

(a) *Cyathostominae*

The genus *Cyathostomum* is represented by 3 species. *Cyathostomum alveatum* and *Cyathostomum montgomeryi* were consistently present in most zebra. Although *Cyathostomum tetracanthum* was recovered in only 4 zebra, the mean worm burdens far exceeded those of the former 2 species.

In the genus *Cylicocyclus*, both *Cylicocyclus auriculatus* and *Cylicocyclus triramosus* were recovered both in greater numbers and from more animals than *Cylicocyclus gyalcephaloides* and *Cylicocyclus insigne*, and these were present in 1 and 2 animals respectively.

TABLE 1 Descriptions used in the identification of nematodes in Burchell's zebra

	Boulenger (1917)	Boulenger (1920)	Cram (1924)	Ihle (1925)	Kotlán (1920a, b)	Lichtenfels (1975)	Looss (1900a, b)	Looss (1902)	Ortlepp (1938)	Ortlepp (1962)	Popova (1955)	Popova (1958)	Theiler (1923)	Yorke & MacFie (1918)	Yorke & MacFie (1920)
<i>Cyathostominae</i>															
<i>Cyathostomum alveatum</i>						+						++	++		
<i>Cyathostomum montgomeryi</i>		+				+						++	++		
<i>Cyathostomum tetracanthum</i>						+						++	++		
<i>Cylicocyclus auriculatus</i>						+						++	++		
<i>Cylicocyclus gyalcephaloides</i>						+			+			++	++		
<i>Cylicocyclus insigne</i>						+						++	++		
<i>Cylicocyclus triramosus</i>	+					+						+	+		+
<i>Cylicodontophorus schürmanni</i>						+				+		+	+		
<i>Cylicostephanus bidentatus</i>				+	+	+						+	+		
<i>Cylicostephanus calicatus</i>			+		+	+	+					+	+	+	
<i>Cylicostephanus minutus</i>		+				+									
<i>Poteriostomum ratzii</i>						+						+	+		
<i>Strongylinae</i>															
<i>Craterostomum acuticaudatum</i>						+							+		
<i>Triodontophorus minor</i>						+		+					+		
<i>Spiruridae</i>															
<i>Draschia megastoma</i>													+		
<i>Habronema majus</i>													+		
<i>Habronema muscae</i>													+		
<i>Habronema zebrae</i>													+		

TABLE 3 Total worm burdens of nematodes in Burchell's zebra*

	Colt 1	Colt 2	Colt 3	Colt 4	Stallion 1	Stallion 2	Stallion 3	Stallion 4	Stallion 5	Stallion 6	Total burden	Number of zebras positive	Range
Cyathostominae													
<i>Cyathostomum alveatum</i>	—	551	71	1 063	1	388	—	—	2 814	2 081	6 969	7	1-2 814
<i>Cyathostomum montgomeryi</i>	870	5 167	—	9	6	1 943	—	2 182	4 219	—	14 390	6	9-5 167
<i>Cyathostomum tetracanthum</i>	—	13 723	—	—	2	3 107	7 370	—	—	—	24 206	4	6-13 723
<i>Cylicocyclus auriculatus</i>	—	15 792	1 610	—	—	5 086	—	—	—	—	22 490	4	2-15 792
<i>Cylicocyclus gyaloccephaloides</i>	—	1 579	—	—	—	—	—	—	—	—	1 579	1	—
<i>Cylicocyclus insignis</i>	—	—	—	—	1	636	—	—	—	—	637	2	1-636
<i>Cylicocyclus irramosus</i>	1 400	159 491	6	1 518	5	6 992	—	—	480	—	169 892	7	5-159 491
<i>Cylicodontophorus schürmanni</i>	2	—	—	—	—	—	6	—	1	10	19	4	1-10
<i>Cylicodontophorus</i> n. sp.	—	—	—	40	—	—	—	—	—	—	40	1	—
<i>Cylicostephanus bidentatus</i>	4	—	—	17	17	1 959	50	5	—	34	2 086	7	4-1 959
<i>Cylicostephanus calicatus</i>	1 417	2 068	95	499	3	16 658	30	4 245	235	882	26 132	10	3-16 658
<i>Cylicostephanus minutus</i>	—	—	—	6	—	—	—	—	—	4	10	2	4-6
<i>Cylindropharynx</i> spp.	70	63	73	82	85	17 187	19 780	19 875	18 173	3 608	78 996	10	63-19 875
<i>Poteriostomum ratzii</i>	—	—	—	7	—	—	—	—	1	—	8	2	1-7
Strongylinae													
<i>Craterostomum acuticaudatum</i>	12	—	100	20	2	—	—	15	—	3	152	6	2-100
<i>Triodontophorus minor</i>	—	—	—	5	1	3	—	—	—	—	9	3	1-5
Spiruridae													
<i>Draschia megastoma</i>	27	145	317	7	56	1 173	1 159	953	493	228	4 558	10	7-1 173
<i>Habronema majus</i>	—	1 243	15	4	10	—	708	80	180	6	2 246	8	4-1 243
<i>Habronema muscae</i>	42	1 244	16	31	60	—	106	40	78	—	1 617	8	16-1 244
<i>Habronema zebrae</i>	4	1 864	72	31	82	665	41	10	—	64	2 833	9	10-1 864

* These data differ from those reported by Scialdo *et al.* (1982) (which dealt with generic identification only). That material was discarded and specific identification is based on the remainder of the material.

must be redescribed in greater detail, as the present descriptions are inadequate for specific identification. It appears *Cylicostephanus calicatus* fits all the characteristics described by Kotlán (1920a,b), Theiler (1923), Popova (1958) and Lichtenfels (1975) except for one. In the specimens from the present investigation there were no genital appendages on the dermal cone of the male. In the opinion of J. Ralph Lichtenfels (personal communication, 1982), this may represent a new subspecies. Further study, which should include a comparison with specimens from the horse, is necessary. The *H. muscae* recovered resembles that described from the horse. Two differences are that the spicules of the male are in the ratio of 3:1 and not 5:1, and the vagina of the female is shorter than recorded by Theiler (1923) and Lichtenfels (1975).

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