

A REDFSCRIPTION OF TRACHYGONETRIA
QUADRILABIATA AND ATRACTES AFRICANA
(ORTLEPP, 1933) FROM DESERT
TORTOISE TESTUDO SULCATA
IN KHARTOUM ZOO.

El Sinnary, K.A: Saad, M.B: Mubarak, S.
and Siddig, M.A.M.

Veterinary Research Administration, P. O. Box 8067,
Elamarat, Khartoum, SUDAN.

INTRODUCTION

Studies of parasitic diseases of wildlife in general and reptiles in particular are meager in Sudan. Bisa et al (1979) reported the presence of a nematode (Ascaris python) in a python. More recently Saad et al (1983) listed some parasites of wildlife and birds kept at Khartoum Zoo. However, we felt that a lot of information could be gathered from such type of investigations of parasites of wildlife both in captivity and in the wild. In this paper we present description and illustrations of two nematodes encountered in a desert tortoise for the first time in Sudan. The two nematode species were found to be heavily infecting most of the examined desert tortoises in Khartoum Zoo.

MATERIALS AND METHODS

Out of a number of desert tortoises examined (Saad et al

1983), one was highly parasitised. Autopsy of this highly parasitised tortoise revealed that its intestines, which seemed as one unit, were containing numerous different developmental stages of the parasites. Since the worm size was too small to recover macroscopically, we resorted to several washes of the intestinal contents with distilled water to recover the worms. The final wash was made with physiological saline. The worms were then preserved in 70% alcohol and lactophenol and examined microscopically for the purposes of description and

illustration. All measurements are presented in millimeters unless otherwise indicated.

Trachygonetria quadrilabiata
(Ortlepp, 1933) (Fig. 1: A-G).

Description:

a- Female: (Size and range, table I)

* Veterinary Officer, Khartoum Zoo.

@ Faculty of Science, University of Khartoum.

The adult female, Fig. 1.A is small, whitish in colour, more or less straight and terminates anteriorly with mouth parts and posteriorly with a fairly long, straight and pointed tail. The head is rounded and constricts off from the body. The surface of the body is cuticular and the cuticle forms a flap in the position of the vulva in the posterior half of the worm. All of the worm body shows striations with the exception of the head and tail regions where striations are absent. The maximum body thickness is at about the middle of the body from where it tapers gradually both anteriorly and posteriorly. The digestive system comprises a mouth, oesophagus, cloaca and anus. The mouth terminates in 3 pairs of lips of which the dorsal one is long and deeply bilobed. The 3 pairs of lips are separated from each other by deep indentations and each lip is covered internally with thick layer of cuticle and carries 3 prongs directed backwards. The most inner one of these prongs rests on the anterior margin of the wall of buccal capsule which is clearly distinct due to a boundary of thickened cuticle. The wall of the buccal capsule gradually thickens from its anterior towards its posterior margin while the cavity of the buccal capsule is divided into 3 distinct parts. Numerous papillae occur in this region, of unfixed number and uneven distribution.

The alimentary canal is a straight, then waaled tube that runs from mouth to anus,

The reproductive system is tubular, consisting of two ovaries oviducts and uteri, The two uteri unite to form the vagina which terminates at the vulva located 0.9 um from the posterior end of the worm.

b- Male: (Size and range, table I)
(Fig. 1-D)

The male worm is smaller than the female and differs from it in having a thin non prominent cuticle in contrast to the relatively thicker female cuticle. the widest part of the male worm body occurs at the middle region which is thread like and tapering anteriorly. The posterior extremity which generally curved towards the ventral surface terminates in a spike 0.3 um long. The spike is absent in males of Trachygonctria poweri (Fig. 1.E).

The digestive system is similar to that of the female worm while the reproductive system is a straight tube consisting of two testes, vasa efferentia, an ejaculatory duct and two copulatory spicules. The left spicule is very much longer than the right one although both are similar in shape, being almost straight and tapering to a fine point (Fig. 1-E). A number of preanal, adanal and postanal caudal papillae are observed in most examined specimens with apparently no strict pattern of distribution. The most common arrangement observed demonstrates 2-3 pairs preanal, 1-2 pairs adanal and 2-3 pairs postanal caudal papillae.

Atractes africana (Ortelepp, 1933)

a- Female: (Size and range, table 2)

The female worm is delicate, more or less straight, with a rounded head. The maximum body thickness is at about the middle region of the worm which tapers posteriorly into a long, more or less straight pointed tail. The whole body of the worm is covered with a thin smooth cuticle.

The digestive and reproductive systems of this worm are similar to those of the female of Trachygonetria quadrilabiata except that the oesophagus of this species is shorter and consist of three distinct parts, namely an anterior muscular portion, a middle glandular portion and a muscular bulb. The three distinct regions are of uniform thickness until the region where the muscular bulb joins the hind end of the oesophagus. The whole orgⁿ

including the muscular bulb which is separated from the glandular portion by a slight constriction, is about 450 um while the glandular portion attains a maximum length of 154 um.

b- Male: (Size and range, table 2)

The male worm is smaller than the female worm and is similar to the male worm of Trachygonetria quadrilabiata in almost all morphological features. The only exceptions are that the posterior end is spirally coiled and terminates in a fairly long and pointed tail. Futhermore, the copulatory spicules in Atractes africana are slightly

curved while they are more or less straight in Trachygonetria quadrilabiata, nevertheless they are of unequal size in both, the left one being longer than the right.

Eggs: (Fig. 3)

Only one type of egg was recovered from faecal samples collected from infected tortoises which might indicate similarity in shape and size of the eggs produced by the two worms. Recovered eggs (Fig. 3) are smooth, then shelled and oval in structure containing in all cases partially developed embryos. The average size of the egg is 0.15 X 0.07 um. However, eggs vary in length from 0.14 to 0.152 um with a thickness of 0.068 to 0.072 um.

DISCUSSION

It is difficult to make a true assessment of the significance of these two parasites in sudan owing to the limited observation record above. Nevertheless, there is no doubt that both Trachygonetria quadrilabiata and Atractes africana are common helminths of desert tortoises in the country. Our limited observations do not indicate definite clinical manifestations associated with the presence of adult stages of these two species in the intestinal tract despite the severity of the infection. On the other hand it is highly probable that the presence of adult worms may account for the sever lesion present in the mucosal lining of the infected reptile.

The description and measurements of these two parasites provided in this paper do not differ greatly from those presented by Ortlepp, 1933, however, several additions have been made to complete the description. Trachygonetria quadrilabiata and Atractes africana are living in the same site of the intestine of desert tortoises, their eggs are apparently similar but the adult worms are morphologically distinct. The Trachygonetria quadrilabiata worms are longer than Atractes africana and characterised by the presence of obvious four lips, cuticular flap over the vulva and termination of the posterior end in a spike. On the other hand Atractes africana is characterised by much shorter oesophagus than Trachygonetria quadrilabiata and the tail of the male is long and coiled in contrast to the relatively straight tail of Trachygonetria quadrilabiata males.

SUMMARY

Trachygonetria quadrilabiata and Atractes atractes (Ortlepp, 1933) were found in the intestine of a desert, Sudanese

tortoise autopsied at Khartoum Zoo. Most morphological features of the adult worms are described and illustrated.

ACKNOWLEDGMENT

The authors wish to thank Dr. R. Muller and Dr. L.F. Khalil of the Commonwealth Institute of Parasitology for their great help in identifying the two worms and for reading and revising the manuscript.

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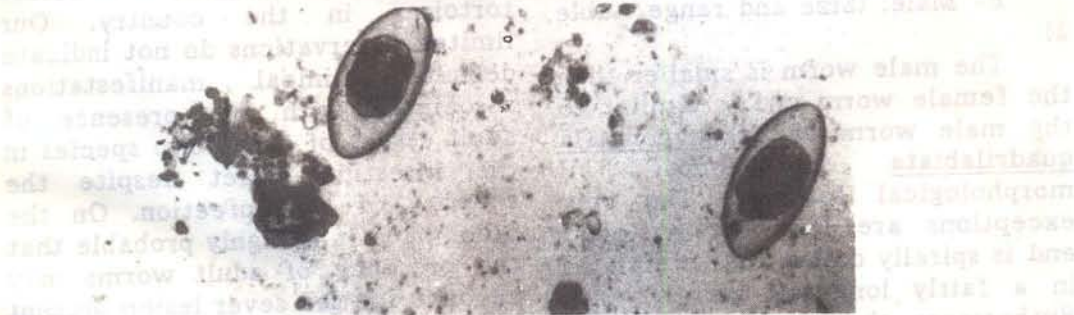


Fig. 3 The type of eggs observed during faecal examination of a desert tortoise (*Testudo sulcata*).

Table 1.

Measurements of *Trachygonetria quadrilabiata* male and female in millimetres

	Number of worms examined		Mean and range * (male)	Mean and range * (female)
	Male	Female		
Total body length	50	50	2.7(2.5-3.4)	4.9(2.9-5.75)
Maximum width	50	50	0.13(0.08-1.0)	0.3(0.18-0.45)
Oesophagus length	50	50	0.76(0.5-1.0)	1.5(0.9-2.6)
Distance location of the vulva from the posterior end of the worm.	-	50	-	0.9(0.25-1.3)
Right specule	25	-	0.09(0.07-0.1)	-
Left specul	25	-	0.20(0.1-0.3)	-

* range in Parenthesis

Table 2/
Measurements of *Atractes africana* male and female in millimetres.

	Number of worms examined		Mean and range *
	Male	Female	
Total body length	50	50	3.4(3.15-5.35) 4.5(3.4-6.0)
Maximum width	50	50	0.09(0.12-0.19) 0.15(0.13-0.2)
Oesophagus length	50	50	0.3(0.29-0.5) 0.40(0.34-0.56)
Distance location of the vulva from the posterior end of the worm.	-	50	- 0.6(0.5-0.7)
Right specule	15	-	0.13(0.12-0.15) -
Left specul	15	-	0.4(0.35-0.55) -

* Range in parenthesis.

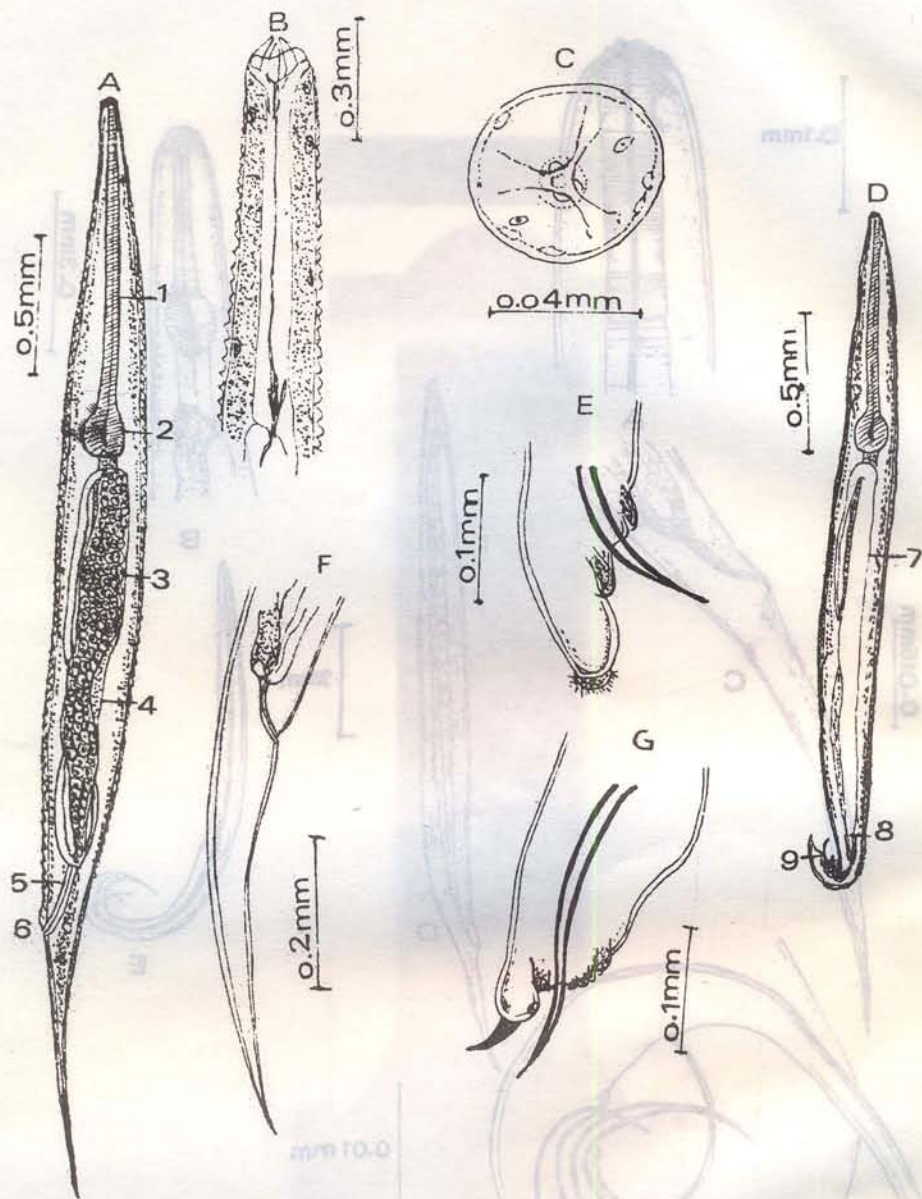


Fig. 1 (A-G). *Trachygonetria quadrilabiata*

(A)= Adult female (1= anterior oesophagus, 2= posterior oesophagus, 3= uterus, 4= intestine, 5= vagina, 6= vulva)

(B)= anterior extremity of female, (C)= cross section of the mouth part (ventral view), (D)= adult male, (E)= posterior extremity of the male, (F)= posterior extremity of the female, (G)= posterior extremity of the male

Thelandros sexlabiata.

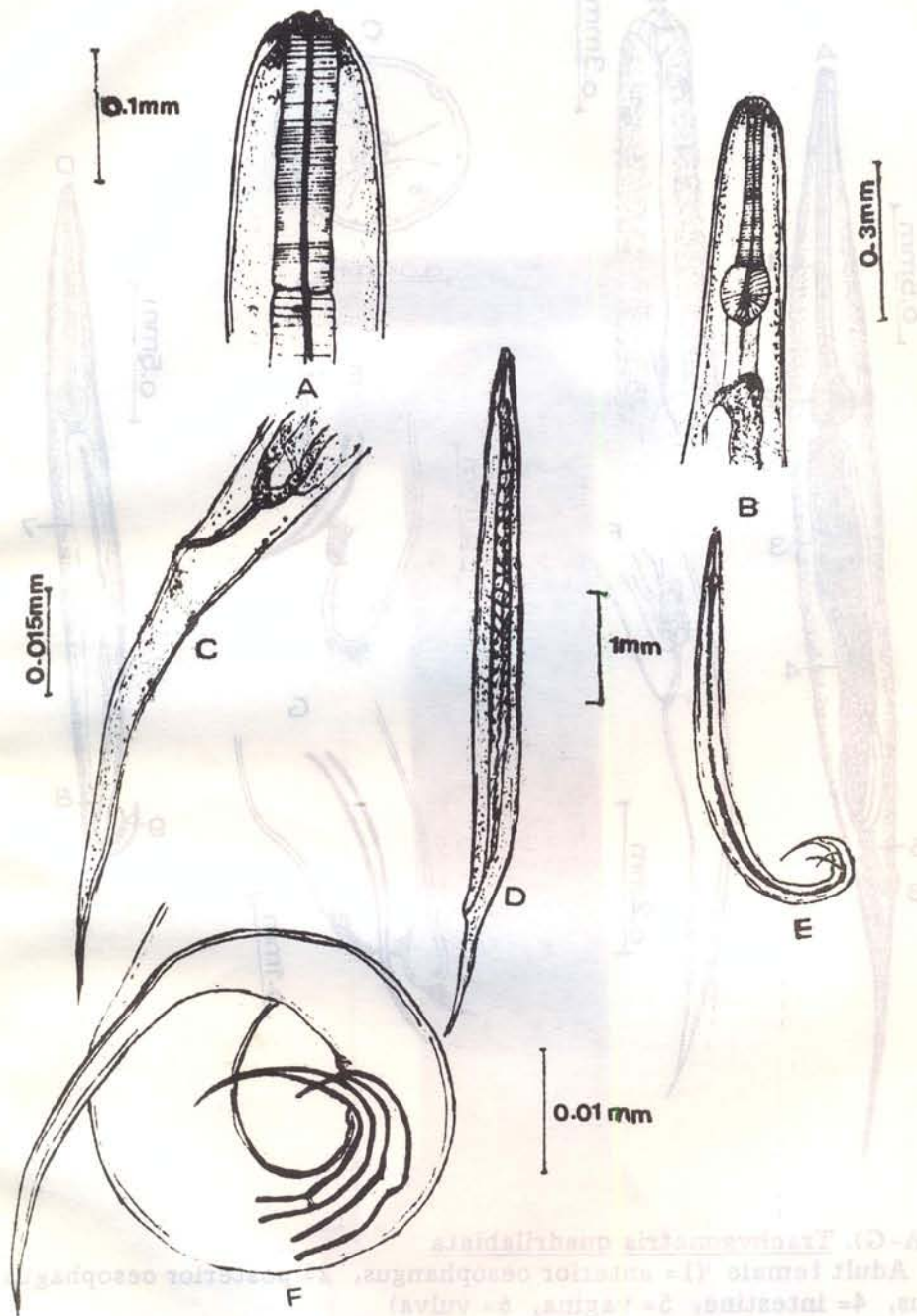


Fig. 2 (A-E) *Atractes africana*
 (A) cephalic extremity (B) head of the female (C) posterior end of the male (D) adult female (E) adult male (F) posterior end of male.