

TICKS IN THE SOUTH AFRICAN ZOOLOGICAL SURVEY
COLLECTION – PART X – RHIPICEPHALUS MÜHLENSI.

LOIS E. SALISBURY, Onderstepoort Laboratory.

RHIPICEPHALUS MÜHLENSI — ZUMPT 1943

Male (Fig. 1)

Small, average size, 2.7 × 1.6 mm.; light to medium chestnut brown. Anterior projection of coxa I visible dorsally.

Conscutum

Elongate, widens behind the level of the eyes. Emargination narrow and deep. Eyes large, light-coloured, almost flush with the surface but may be picked out on the dorsal side by a shallow groove and two or three punctations. Cervical pit deep, cervical groove very shallow, diverging to behind the level of the eyes. Lateral groove absent, represented by an irregular row of medium punctations. The area between the cervical grooves and the lateral punctations is slightly depressed and the surface shows fine reticulations as in *R. appendiculatus*. Marginal groove poorly developed, shallow, external edge fairly steep but slopes up gradually on the internal edge; extends for about $\frac{1}{3}$ of the distance from the festoons to the eye. The anterior part of the marginal groove may be indicated by an irregular line of medium punctations. Festoons not strongly marked. Posterior grooves well developed, floor wrinkled; median is spindle-shaped, narrower anteriorly; laterals oval or rounded, do not usually encroach on festoons. Numerous, medium, shallow punctations are somewhat irregularly distributed over the conscutum. There is a tendency for the punctations to occur in transverse rows. Punctations are usually most numerous in the area corresponding to the female scutum and between the posterior grooves. Punctations are usually more sparse near the marginal grooves, a little anterior to the posterior grooves and in the cervical fields. There are very few medium punctations on the shoulders and marginal folds; in these areas a few small shallow punctations occur. Fovea very inconspicuous.

Sub-collare: Present, punctate.

Rostrum

Slightly longer than broad. *Basis capituli* one-and-a-half times as broad as long, including the cornua which are well developed. Posterior margin concave. Postero-lateral margin concave, about twice as long as the almost straight antero-lateral margin. Auriculae obtuse, they are not very conspicuous from the dorsal surface, but appear as short sharp spurs on the exceptionally long and narrow ventral surface. Dorsal surface smooth. There is often a line of 3 or 4 punctations across the centre of the basis capituli.

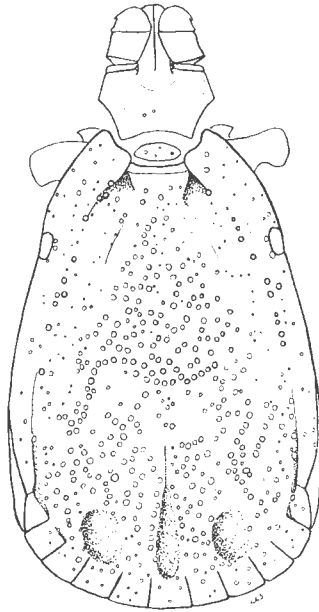


FIG. 1.—*R. mühlensi*. Male, dorsal view.

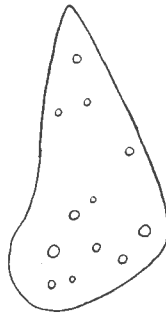


FIG. 2.—*R. mühlensi*. Male anal plate.

Palps

Longer than broad, articles broader than long. Article II larger than article III, article III sharply edged, with a short overlap near its tip.

Ventral surface

Anal plates (Fig. 2) broadly triangular, anterior external margin gently curved, external angle rounded, posterior margin nearly straight; the posterior part of the internal margin bulges out slightly, the internal angle is rounded; anal plates are punctated and heavily chitinized. Accessory anals and ventral plaques not chitinized.

Ventral surface has numerous long white hairs.

Legs

Stout, increase slightly in size from I–IV. Coxa I deeply cleft.

Female (Fig. 3)

Small, average size unengorged 2.6×1.4 mm. Light to medium chestnut brown.

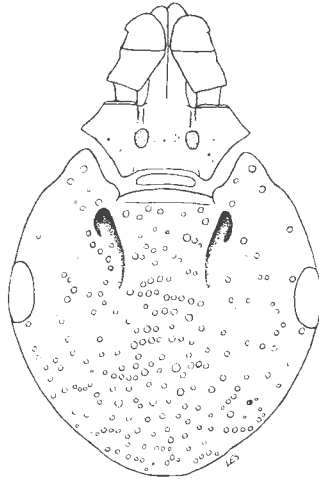


FIG. 3.—*R. mühlensi*. Female, scutum and rostrum.

Scutum

Slightly longer than broad. Posterior angle a broad curve, postero-lateral margin may be sinuous, antero-lateral margin convex immediately in front of the eye, but has a slight concavity behind the rather long shoulders. Eyes large, light-coloured, almost flat; may be marked on the dorsal side by a slight groove and a few punctations. The eyes are situated at the widest part of the scutum, just anterior to its midline. Emargination wide and deep. Cervical pit deep; cervical groove very shallow, converging at first and then diverging; it does not reach the posterior border. Lateral groove absent, but may be indicated by an irregular row of medium punctations. The cervical field is slightly depressed and its cuticle is usually very slightly reticulated. Numerous, medium, shallow punctations occur on the central part of the scutum, their size varies slightly and they tend to be arranged in transverse lines. A few punctations occur on cervical fields, very few on lateral folds, which are raised and smooth. A few fine punctations occur on lateral folds and anterior part of scutum.

Sub-collare

Present, showing as a narrow strip.

Rostrum

About as long as broad. *Basis capituli* more than twice as broad as long, including the cornua, which are broad and slightly rounded out, but do not project much. Posterior margin straight or slightly concave. Postero-lateral and antero-lateral margins concave. The auriculae are right-angled and situated just anterior to the centre of the basis capituli. *Areae porosae* small, oval, separated by a distance of two or three times their diameter. A few punctations usually occur on basis capituli. Ventral surface shorter than in the male, auriculae broad and rounded. *Palps* longer than broad. Articles broader than long. Article II larger than article III. Article III with a sharp overlap near its tip.

Ventral surface

Punctate, numerous long white hairs.

Legs

Subequal, coxa I deeply cleft.

Nymph (Fig. 4-5)

Size 1.25 × 0.75 mm., unengorged.

Scutum

Broader than long, 0.65 × 0.52 mm., eyes at broadest point slightly more than halfway back. Posterior angle broadly rounded. Postero-lateral margins nearly straight, antero-lateral margins convex. Emargination broad and fairly deep. Cervical pits deep, cervical grooves begin to converge and then diverge, continuing back almost to the posterior border. Lateral grooves run almost parallel with the antero-lateral margins and meet the postero-lateral margin just behind the eye. They separate the fairly smooth raised marginal folds from the rougher-surfaced cervical field. The cervical fields form elliptical depressions. A few punctations are scattered over the scutum.

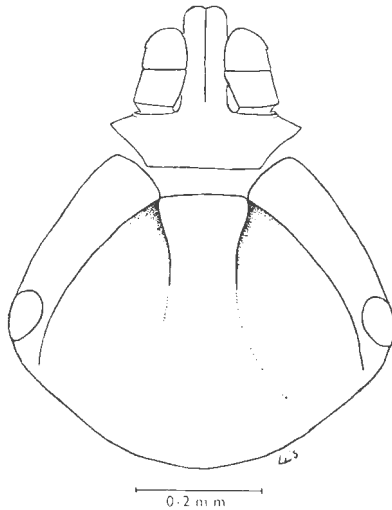


FIG. 4.- *R. mühlensi*. Nymph, scutum and rostrum.

Rostrum

Slightly broader than long. *Basis capituli* about three-and-a-half times as broad as long. Posterior margin rectilinear to slightly convex; it curves smoothly into the postero-lateral margin which is concave. Cornua absent. Antero-lateral margin rectilinear and inclined so as to form a sharp lateral angle in the anterior half of the basis capituli. Ventral spurs present. *Palps* longer than broad. Article II longer than article III, the articles are about as broad as long. A retrograde spur occurs on the ventral surface of article III.

Larva (Fig. 6-7)

Size 0.55 × 0.38 mm., unengorged.

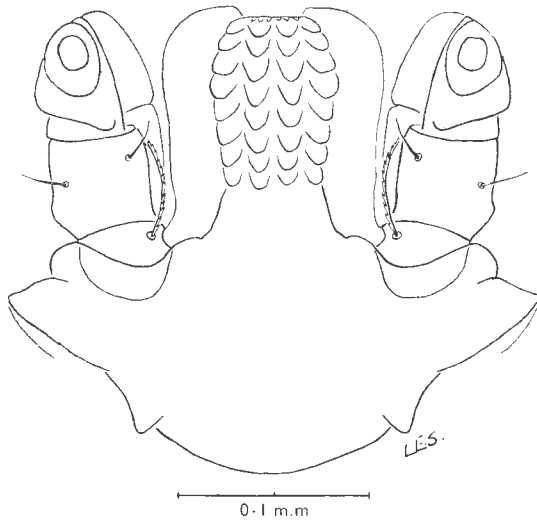


FIG. 5.—*R. mühlensi*. Nymph, rostrum, ventral view.

Scutum

About one-and-one-third times as broad as long, 0.33×0.24 mm. average. Eyes at broadest point are slightly more than half-way back. Postero-lateral margin convex to very slightly sinuous, antero-lateral margins convex. Emargination wide and deep. Cervical grooves extend back to eye level. Eyes conspicuous.

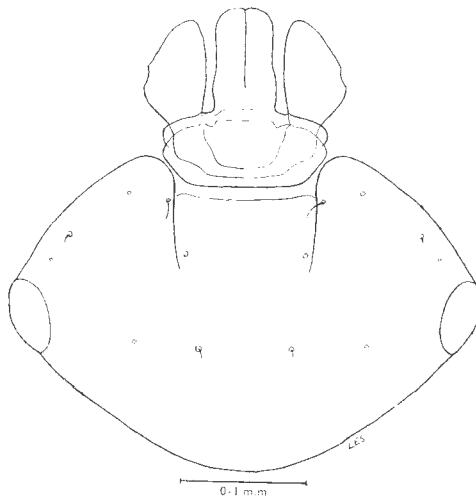


FIG. 6.—*R. mühlensi*. Larva, scutum and rostrum.

Rostrum

About as long as broad. *Basis capituli* more than twice as broad as long. Posterior margin nearly straight, antero-lateral margin convex.

Palps

One-and-a-half times as long as broad. Article III bears a conspicuous retrograde spur on its ventral surface.

Descriptions based on the F_1 generation reared at Onderstepoort, from a female off Impala, Mkuzi Game Reserve, 20.156. Onderstepoort collection number 3033. Two paratypes from coll. Zumpt have been examined.

Holotype male, Kondoa-Irangi, Tanganyika, Berlin Museum.

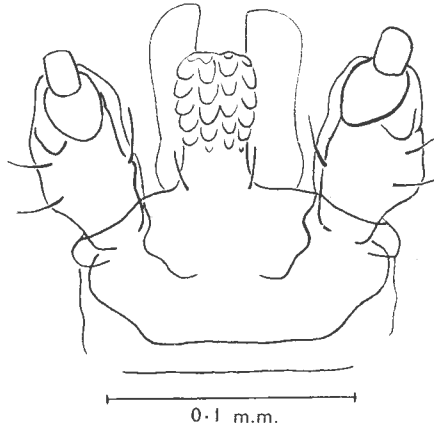


FIG. 7.—*R. muhlensii*. Larva, rostrum, ventral view.

Occurrence of R. muhlensii

The type specimen was collected at Kondoa Irangi, Tanganyika. Zumpt also records *R. muhlensii* from other localities and from the following hosts in Tanganyika: *Hippotragus equinus*, *Giraffa camelopardalis* and *Tragelaphus scriptus*. Hoogstraal 1954, identifies a specimen in the Nuttall collection at the British Museum (Natural History) off *Hippotragus equinus*, Tanganyika, as *R. muhlensii*.

Hoogstraal 1956 records a single female from a bovine at Yei, Equatoria Province, Sudan.

Theiler and Robinson 1954 list several records from the Belgian Congo, in Ruanda Urundi.

Miss Walker has two records from Makueni, Kenya, adults from bovines V. III. 50, coll. S. G. Wilson; 1 female from a lesser kudu V. III. 52, coll. R. Smith. Two records from Liwale, Tanganyika; adults off a buffalo 26. VIII. 52, and 1 nymph off a civet 9. XI. 53, coll. C. J. P. Ionides.

Santos Dias 1950 lists records from *Tragelaphus angasii*, *Tragelaphus scriptus sylvaticus* and *Syncerus c. caffer* from Govuro, Moçambique. He also gives 4 hosts for *R. masseyi* but in 1952 states that these should have been listed under *R. muhlensii*; they are *Hippotragus n. niger*, *Taurotragus oryx livingstonii*, *Tragelaphus angasii* and *Syncerus c. caffer*. Tendeiro 1955 states that his 1954 record of *R. masseyi* from impala, Moçambique, should have been recorded as *R. muhlensii*.

Onderstepoort records are as follows: nyala, Ubombo; warthog, Lower Umfolosi; and nyala, Mkuzi Game Reserve, Zululand; all were previously reported as *R. masseyi* by Theiler 1947. There is a single Moçambique record off nyala at Maputo. There are many records from the Mkuzi Game Reserve off the following hosts (the number after the host denotes the number of collections taken from that animal): nyala 4, reedbuck 2, duiker many, steenbuck 1, bushbuck many, impala 3, warthog 1, bushpig 1.

Santos Dias 1951 (published 1953) lists a number of hosts, with no indication of locality. Those not previously mentioned are: *Canis familiaris*, *Nesotragus livingstonianus zuluensis*, and *Strepsiceros s. strepsiceros*.

All the records quoted so far refer to adults. As some uncertainty has existed about the identification of the immature stages, most of the records must be regarded with suspicion. The following records, identified since the life history has been worked out, can, however, be accepted:— One nymph off civet, Liwale, Tanganyika, (J. B. Walker, unpublished); NLL off impala, Mkuzi Game Reserve, (Onderstepoort record).

Occurrence of R. masseyi

As there is still some uncertainty as to the difference between *R. mihlensi* and *R. masseyi*, and as they appear to be present in the same localities and on similar hosts, the records for *R. masseyi* are included in this paper.

Nuttall and Warburton's type material was collected off *Bos caffer* at Kansanshi, North West Rhodesia.

Zumpt 1943 gives Northern Rhodesia and Tanganyika as localities with *Bos caffer* and wild pig (?) as hosts.

Wilson 1950 records *R. masseyi* from a dog in Nyasaland.

As previously stated, Santos Dias 1952 changes his 1950 host list to *R. mihlensi*. However, in 1952 Santos Dias redescribes *R. masseyi* and gives the following Moçambique records: *Tragelaphus scriptus sylvaticus* from Mossurize, Manica and Sofala; buffalo from Lioma, Zambézia.

Tendeiro 1954 lists *R. masseyi* from *Tragelaphus angusii* from Moçambique.

R. attenuatus Neumann 1908. Should *R. masseyi* and *R. attenuatus* prove to be synonymous, then according to the law of priority, as *R. attenuatus* appeared in print first, this will be the specific name for the tick.

Developmental Periods

Average periods: Ticks kept in a hot room at about 85 F and 85 per cent R.H., fed on guinea pigs.

- Preoviposition 9 days.
- Larvae hatch 30- 40 days.
- Larvae engorge 4 days.
- Larvae moult 10-14 days.
- Nymphs engorge 4 days.
- Nymphs moult 15-19 days.

SUMMARY

1. The male and female of *R. mihlensi* are redescribed and the larva and nymph described for the first time, from material reared at Onderstepoort.
2. Host lists and geographical distribution for *R. mihlensi* and the closely related *R. masseyi* are given.

REFERENCES

- HOOGSTRAAL, H. (1954). Noteworthy African Tick records in the British Museum (Natural History) collections. *Proc. ent. Soc. Wash.*, Vol. 56, No. 6, pp. 273-279.
- HOOGSTRAAL, H. (1956). African Ixodoidea. Vol. 1 Ticks of the Sudan. *U.S. Naval Medical Research Unit No. 3, Cairo; Research Report NM005 050.29.07.*
- NEUMANN, L. G. (1908). Notes sur les Ixodides VI. *Arch. Parasit. Paris*, Vol. 12, pp. 5-27.
- NUTTALL, G. H. F. AND WARBURTON, CECIL. (1908). On a new genus of Ixodoidea together with a description of eleven new species of ticks. *Proc. Camb. Phil. Soc.*, Vol. 14, Part 4, pp. 392-416.
- SANTOS DIAS, J. A. TRAVASSOS. (1950). Contribuição para o conhecimento da fauna Ixodológica de Moçambique. *Docum. Moçambique*, No. 61, pp. 113-170.
- SANTOS DIAS, J. A. TRAVASSOS. (1951 published 1953). List of Moçambique ticks and their known hosts. *An. Serv. vet. Moçambique*, pp. 227-252.
- SANTOS DIAS, J. A. TRAVASSOS. (1952). Notas sobre alguns Ixodídeos de Moçambique novos ou insuficientemente conhecidos. *Mem. Mus. Zool. Univ. Coimbra*, No. 210, pp. 1-16.
- TENDEIRO, J. (1951). Subsídios para o conhecimento da entomofauna parasitária de Moçambique. *An. Ita. Miss. geogr., Lisboa*, Vol. 6, Tomo 4, pp. 121-152.
- TENDEIRO, J. (1955). An Ixodological survey of Moçambique. *Garcia de Orta, (Rev. Ita. Miss. Geogr. Lisboa)*. Vol. 3, No. 2, pp. 231-236.
- THEILER, G. (1947). Ticks in the South African Zoological survey Collection. Part VI. Little known African Rhipicephalids. *Onderstepoort J. Vet. Sci.*, Vol. 21, No. 2, pp. 253-300.
- THEILER, G. AND ROBINSON, B. N. (1954). Tick Survey VIII. Check-lists of ticks recorded from the Belgian Congo and Ruanda Urundi, from Angola, and from Northern Rhodesia. *Onderstepoort J. Vet. Res.*, Vol. 26, No. 3, pp. 447-461.
- WILSON, S. G. (1950). A check-list and host-list of Ixodoidea found in Nyasaland, with descriptions and biological notes on some of the Rhipicephalids. *Bull. Ent. Res.*, Vol. 41, Part 2, pp. 415-428.
- ZUMPT, F. (1943). Rhipicephalus aurantiacus Neumann und ähnlich Arten. VIII. Vorstudie zu einer Revision der Gattung Rhipicephalus Koch. *Z. parasitenk.*, Vol. 13, Part 1, pp. 102-117.