

## ***Rhipicephalus aquatilis* sp. nov. (Acari: Ixodidae), a new tick species parasitic mainly on the sitatunga, *Tragelaphus spekei*, in East and Central Africa**

JANE B. WALKER<sup>1</sup>, J.E. KEIRANS<sup>2</sup> and R.G. PEGRAM<sup>3</sup>

### **ABSTRACT**

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This tick, originally referred to as *Rhipicephalus* species III by Yeoman & Walker (1967), was first collected from a sitatunga, *Tragelaphus spekei*, and then occasionally from cattle, in Tanzania. Further collections, mostly from sitatunga, have since been seen from Uganda and Zambia. Descriptions of the adults of this species are given, together with information on their hosts and their distribution.

### **INTRODUCTION**

In 1967, Yeoman & Walker designated five batches of adult ticks from north-western Tanzania as *Rhipicephalus* species III. They had been unable to assign these ticks to any known species in this genus. Since then a further seven collections of this tick from Uganda and three from Zambia have been seen. The specific name, *aquatilis*, a Latin term meaning "living in or near water", refers to the fact that all the collections have been made from hosts in semi-aquatic habitats. The following are descriptions of the adults of this species.

### **DESCRIPTIONS**

Measurements of the ticks are given in millimetres (mm). The range given represents the measurements of the largest and smallest specimens in a batch of ten males and 14 females collected from a sitatunga, Lake Bangweulu, Zambia (RML 120946).

#### ***Rhipicephalus aquatilis* Walker, Keirans & Pegram, sp. nov.**

#### *Synonyms*

*Rhipicephalus* sp. III *sensu* Yeoman & Walker 1967. *The ixodid ticks of Tanzania*: 174.

*Rhipicephalus* sp. III, in Keirans 1985. *George Henry Falkiner Nuttall and the Nuttall tick catalogue* (Nuttall Collection 1714): 736; (Nuttall Collection 3949): 1681.

*Rhipicephalus* sp. III, in Pegram, Perry, Musisi & Mwanaumo 1986. *Experimental and Applied Acarology*, 2:35, 42.

*Rhipicephalus* sp. III, in Matthyse & Colbo 1987. *The ixodid ticks of Uganda*: 317.

<sup>1</sup> Onderstepoort Veterinary Institute, Onderstepoort, 0110 South Africa

<sup>2</sup> Institute of Arthropodology and Parasitology, Georgia Southern University, Statesboro, Georgia 30460-8056, USA

<sup>3</sup> Present address: Food and Agriculture Organization Tick Control Project, Veterinary Research Laboratory, P.O. Box 8101, Causeway, Harare, Zimbabwe

**HOLOTYPE.** ♂, collected from a sitatunga (*Tragelaphus spekei*) at Kaisho (01°19'S, 30°37'E), Karagwe District, Tanzania, on 14 August 1959 by Mrs G. Tullock, from Tanzania Tick Collection WA/99, deposited in the Natural History Museum, London.

**ALLOTYPE.** ♀, data as above.

**PARATYPES.** 4 ♂♂, 2 ♀♀, collection data as above, deposited in the Natural History Museum, London; 2 ♂♂, 2 ♀♀, collection data as above, deposited in the Onderstepoort Tick Collection, OP 3143 i; 2 ♂♂, 2 ♀♀, collected from *T. spekei*, Uganda, OP 3143 ii; 1 ♀, collected from bovine, Limulunga (15°09'S, 23°10'E), Zambia, on 31 March 1982, by R.G. Pegram, OP 3143 iii (TC 737); 1 ♀, collected from bovine, Limulunga, Zambia, in April 1982, by R.G. Pegram, OP 3143 iv (TC 770); 10 ♂♂, 14 ♀♀, collected from *T. spekei* at Lake Bangweulu (11°05'S, 29°45'E), Zambia, on 1 September 1991, United States National Tick Collection, RML 120946.

#### **MALE** (Fig. 1, 3–5)

**CAPITULUM** (Fig. 3). Approximately as broad as long, the length (including cornua) × breadth varying from 0,85 × 0,66 to 0,82 × 0,66 mm.

**BASIS CAPITULI.** Length from palpal insertion to cornua apices varying from 0,48–0,38 mm. Anterolateral margins straight, diverging posterolaterally; posterolateral margins straight to slightly concave, extending anteriorly over the apical processes of coxa I. Cornua large, broader than long, triangular. Dorsal setae of basis capituli as in Fig. 3. Basis capituli ventrally with all features of palps and hypostome typical of the genus.

**PALPS** (Fig. 3). Article I slightly elongate, easily visible dorsally; article II longer than article III; both broader than long.

**BODY** (Fig. 1). Inornate, typical colouration dark reddish brown to almost black, including lateral idiosomal area and conscutum; leg colouration uniformly dark reddish brown. Length (from scapular apices to posterior body margin) × breadth varying from 3,32 × 2,21 to 2,57 × 1,71 mm; broadest at level of anterior margin of spiracle, broadly rounded posteriorly. In engorged specimens the idiosomal wall bulges slightly laterally, and a small caudal process protrudes posteromedially at the sixth festoon.

**CONSCUTUM** (Fig. 1). Eyes marginal, flat, partially outlined by a few punctations. Cervical pits small, slightly converging; internal cervical margins absent; external cervical margins a slight declination marked with a row of punctations; raised lateral borders smooth, shiny. Marginal line narrow, deep, and punctate, delimiting festoon 1 and extending anteriorly to posterior of eye. Posteromedian and posterolateral grooves well developed; posteromedian

straight, narrow; posterolaterals begin as thin lines between festoons 3 and 4 and extend anteriorly as comma-shaped grooves slightly impressed into the conscutal surface. Punctations numerous, small, those in external cervical margin and marginal line very slightly larger, but the overall impression is of a conscutum covered throughout with uniformly small punctations.

**LEGS** (Fig. 1). Increase in size very slightly from I to IV. Anterior projection of coxa I sharp, easily visible dorsally.

**VENTRAL SURFACE—SPIRACLE** (Fig. 4). Elongate, narrow, macula situated near anterior margin; dorsal prolongation visible from dorsum, not much narrower than body of spiracle.

**ADANAL PLATES** (Fig. 5): Usually sickle-shaped as in the illustration, but in some males more straight-sided with only an indication of being sickle-shaped. Accessory plates as in Fig. 5, but less well developed in some males.

#### **FEMALE** (Fig. 2, 6–8)

**CAPITULUM** (Fig. 6). Slightly broader than long, the length × breadth varying from 0,86 × 0,83 to 0,85 × 0,82 mm.

**BASIS CAPITULI** (Fig. 6). Length from palpal insertion to cornua apices varying from 0,48–0,44 mm; porose areas small, indented, subcircular.

**PALPS** (Fig. 6). Article I short, but visible from dorsal surface. Article II longer than article III.

**BODY** (Fig. 2). Length (from scapular apices to posterior body margin) × breadth varying from 3,32 × 2,10 to 3,20 × 1,91 mm. Marginal line usually delimits first two festoons, extending anteriorly as a deep, seta-lined trough to posterior margin of scutum. Colour dark reddish brown to almost black.

**SCUTUM** (Fig. 2, 7). Outline ovoid, colour glossy dark reddish brown to black. Length × breadth varying from 1,69 × 1,65 to 1,54 × 1,46 mm; broadest at eye level. Eyes marginal, flat to very slightly raised. Cervical pits short, deep, converging; internal cervical margin shallow, converging initially then diverging; external cervical margin a slight declination well delineated by a cessation of punctations; raised lateral borders smooth, shiny with only a few punctations on the lateral margins and scapular areas. Punctations numerous, small, evenly distributed centrally, but few in anterior areas of cervical fields.

**LEGS** (Fig. 2). Uniformly dark brown, not increasing in size from I–IV.

**VENTRAL SURFACE—SPIRACLE.** Short, rounded, with small, broad dorsal prolongation.

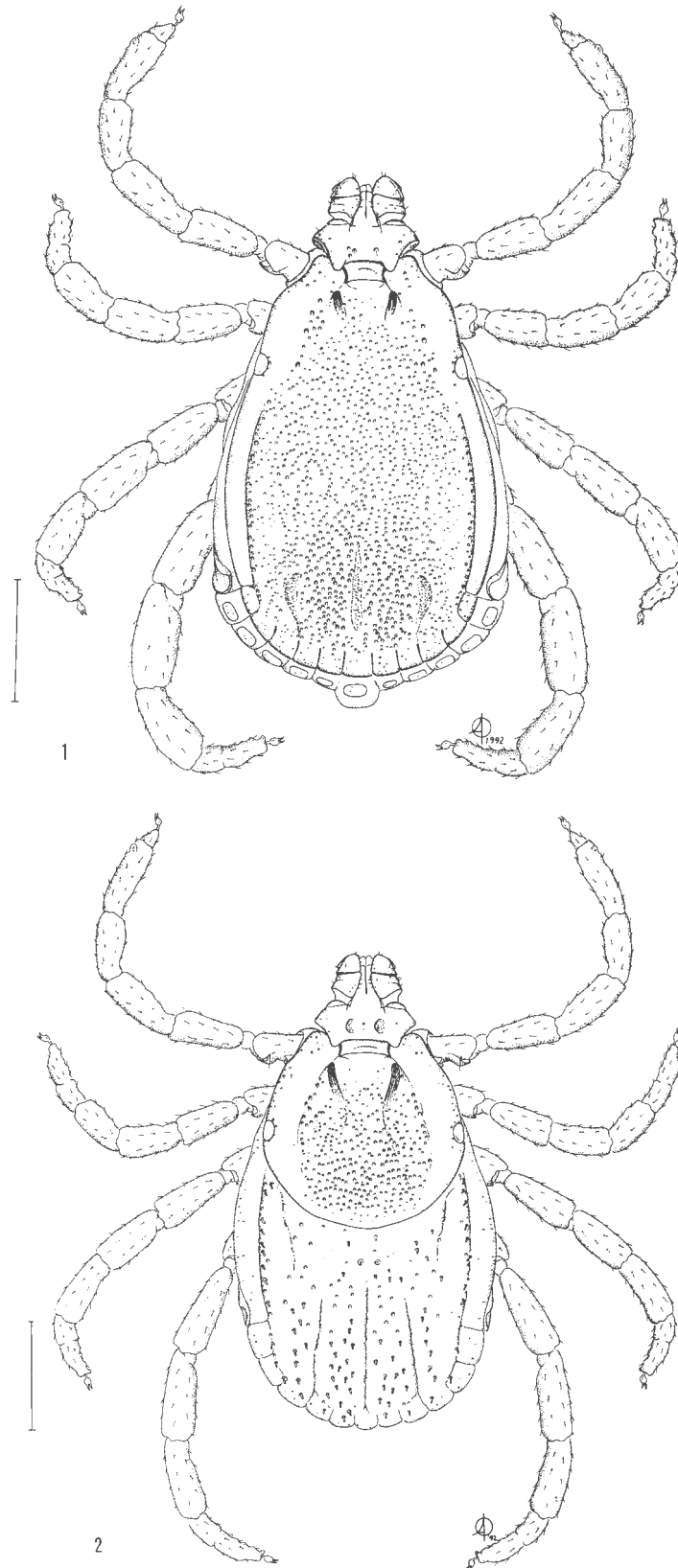


FIG. 1-2 *Rhipicephalus aquatilis* sp. nov. [Onderstepoort Tick Collection 3143 i (WA/99)]. 1. Male, dorsal view. 2. Female, dorsal view. A. Olwage *del.* Scale bars represent 1 mm

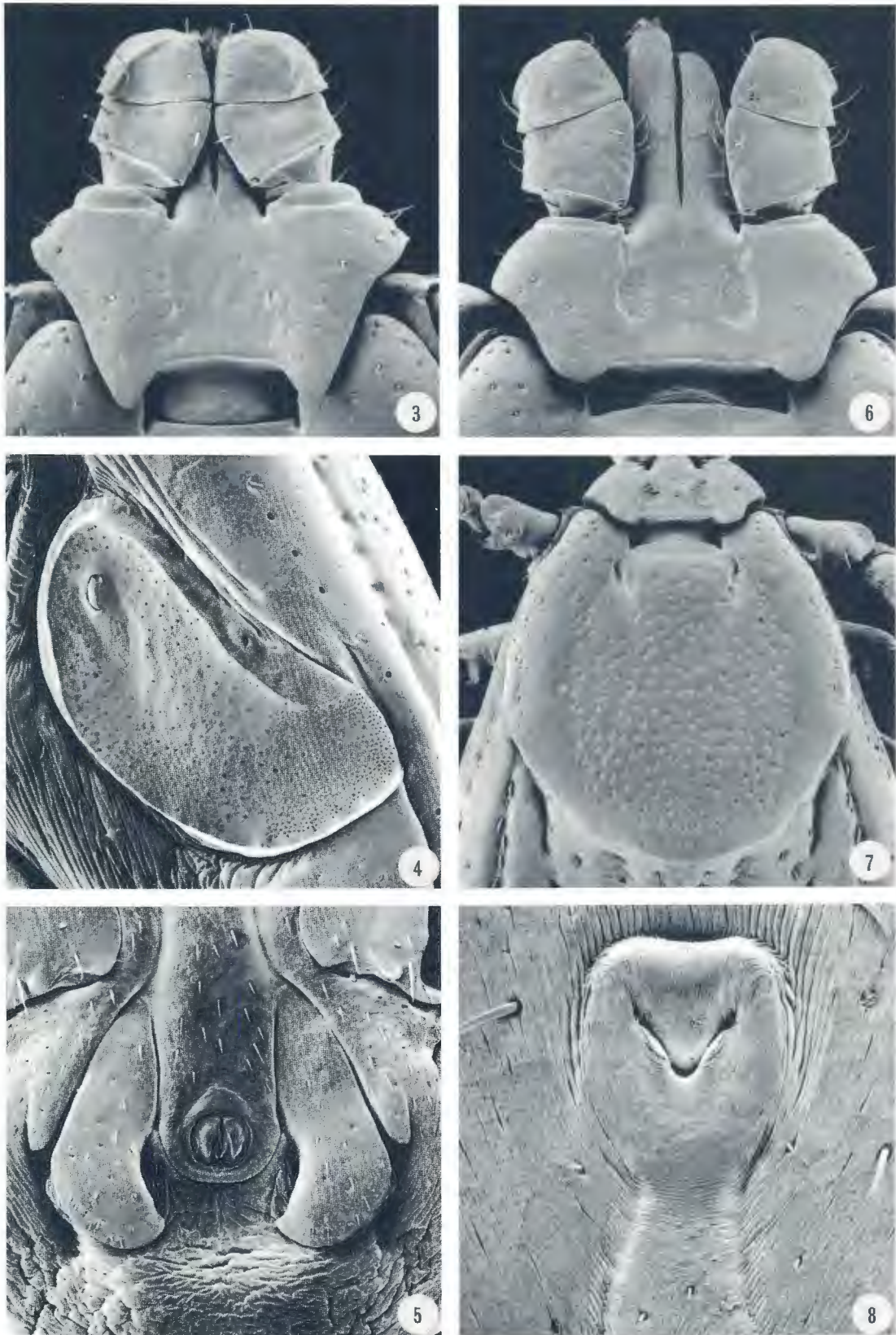


FIG. 3–8 *Rhipicephalus aquatilis* sp. nov. (from Tanzania Tick Collection WA/99). Male: 3. Capitulum, dorsal. 4. Spiracle. 5. Adanal plates. Female: 6. Capitulum, dorsal. 7. Scutum. 8. Genital aperture. SEMS by J.F. Putterill

TABLE 1 *Rhipicephalus aquatilis* sp. nov. — material examined

Depository & accession no.	No. of ticks		Host	Locality	Date of collection	Collector
	♂	♀				
UGANDA						
Nuttall 1714 <sup>a</sup>	14	6	<i>Tragelaphus spekei</i>	Entebbe (00°04'N, 32°28'E)	9 Sept. 1911	S.A. Neave
Nuttall 3949 <sup>a</sup>	1	1	<i>T. spekei</i>	Luwatu (on Koya Experimental Stock Farm), (c. 00°10'N, 32°47'E)	May 1933	W.F. Poulton
BM (NH) <sup>a</sup>	2	1	<i>T. spekei</i>	Entebbe	11 Jan. 1933	R.W.M. Mettam
OP 3143 ii <sup>b</sup>	2	2	<i>T. spekei</i>	Locality unknown	?	J.G. Matthyse
RML 96004 <sup>c</sup>	0	1	<i>Panthera leo</i>	Nyabushozi, Ankole (00°12'S, 30°48'E)	9 Oct. 1965	J.G. Matthyse
JGM/AHRC 65/1045)	3	3	<i>T. spekei</i>	Lake Mburo, Ankole (00°40'S, 30°56'E)	27 Feb. 1967	J.G. Matthyse
JGM/AHRC 67/3032	0	3	<i>P. pardus</i>	Lake Mburo, Ankole	27 Nov. 1967	J.G. Matthyse
TANZANIA						
WA/99 <sup>a</sup> , OP 3143 i <sup>b</sup>	9	7 <sup>d</sup>	<i>T. spekei</i>	Kaisho, Karagwe (01°19'S, 30°37'E) (swamp)	14 Aug. 1959	Mrs G. Tullock
BK/64 <sup>a</sup>	1	0	Bovine	Nyakatoke village, Rubale Gombolola (01°36'S, 31°28'E)	8 July 1958	G.H. Yeoman
BK/77 <sup>a</sup>	1	0	Bovine	Bukwale village, Kanyigo Gombolola (01°01'S, 31°44'E)	15 July 1959	G.H. Yeoman
KG/8 <sup>a</sup>	0	1	Bovine	Kahanga village, Nyaishoze Gombolola (c. 02°00'S, 31°02'E)	26 July 1958	Vet. Guard Sospeta
MW/40 <sup>a</sup>	0	1	Bovine	Mbale village and Gunguli, edge of Smith Sound (03°04'S, 32°48'E)	28 Oct. 1958	G.H. Yeoman
ZAMBIA						
RML 120946 <sup>c</sup>	10	14	<i>T. spekei</i>	Lake Bangweulu (11°05'S, 29°45'E)	1 Sept. 1991	R.G. Pegram
OP 3143 iii <sup>b</sup> (T.C. 737)	0	1	Bovine	Limulunga (15°09'S, 23°10'E)	31 Mar. 1982	R.G. Pegram
OP 3143 iv <sup>b</sup> (T.C. 770)	0	1	Bovine	Limulunga	April 1982	R.G. Pegram

<sup>a</sup> Natural History Museum, London. (Collection nos. WA/99, BK/64, BK/77, KG/8 and MW/40 are in the Tanzania Tick Collection deposited in this museum)

<sup>b</sup> Onderstepoort Tick Collection, Onderstepoort Veterinary Institute

<sup>c</sup> U.S. National Tick Collection

<sup>d</sup> 2 ♂♂ and 2 ♀♀ from collection WA/99 have now been mislaid

GENITAL APERTURE (Fig. 8). Situated between coxae II; V-shaped, arms of V gentle sigmoid curves; area within the opening not bulging.

IMMATURE STAGES. Unknown

### BIOLOGY IN THE FIELD

To date we have seen 15 collections of *R. aquatilis* from four host species in Uganda, north-western Tanzania and Zambia: cattle (six collections); sitatunga (seven collections); and one each from lion (*Panthera leo*) and leopard (*Panthera pardus*) (Table 1, Fig. 9). The collections from the sitatunga comprised 41 ♂♂ and 34 ♀♀ of *R. aquatilis*, while the eight collections from the other three host species comprised only 2 ♂♂ and 8 ♀♀.

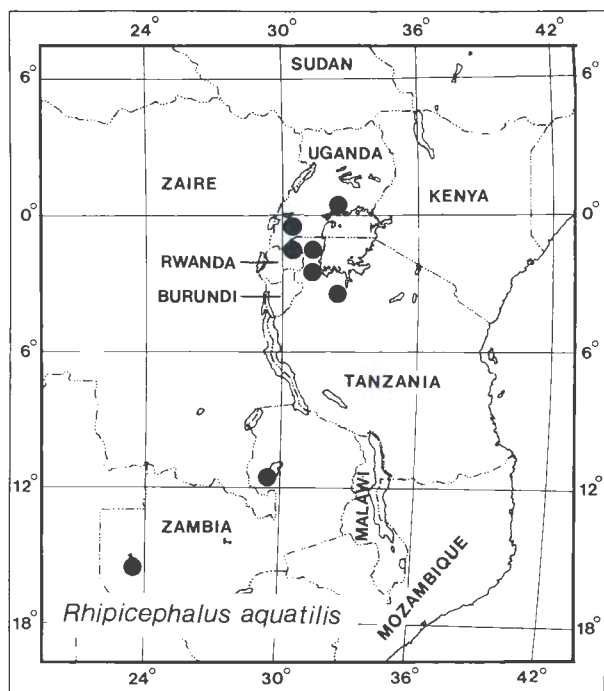


FIG. 9 *Rhipicephalus aquatilis* sp. nov.—distribution

All the hosts from which these ticks were obtained were located in lakeside, swampy or seasonally flooded areas. Nearly half of them were sitatunga. According to Skinner & Smithers (1990) "sitatunga

are semi-aquatic, spending the greater part of their lives in dense papyrus, *Cyperus papyrus*, and reed beds, *Phragmites mauritianus*, in swamp areas in water up to about a metre deep." The cattle from which two of the collections in Tanzania were made were grazing in similar conditions. Those from Bukwale village (BK/77) were at the edge of a swamp with tall, coarse grass and patches of swamp forest. Those near the edge of Smith Sound (MW/40) were in one of the seasonally inundated, shallow, internal-drainage grassland areas known as *mbuga* throughout Tanzania and among lake shore rushes (G.H. Yeoman, unpublished data 1958; Yeoman & Walker 1967). In western Zambia, Limulunga—where two of the other collections on cattle were obtained—is in Mushibe woodland (*Guibourtia coleosperma*), adjacent to the seasonally inundated Zambezi floodplain grasslands (*Loudetia* sp.) (Pegram *et al.* 1986).

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