

A revision of the spider genus *Simorcus* Simon, 1895 (Araneae: Thomisidae) of the Afrotropical Region

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The Afrotropical representatives of the spider genus *Simorcus* Simon, 1895 are revised. The genus belongs to the subfamily Strophinae and is known from the Afrotropical and the Oriental Regions. The genus *Simorcus* is redescribed and twelve species are keyed out, with six species known from one sex only. Nine species are described as new: *S. cummingae* (♀,♂), *S. guinea* (♀), *S. haddadi* (♀,♂), *S. hakos* (♀), *S. itombwe* (♂), *S. kalemie* (♂), *S. lotzi* (♂), *S. okavango* (♀) and *S. vanharteni* (♀,♂). Of the four previously known species, three are redescribed: *S. capensis* Simon, 1895, *S. coronatus*, Simon, 1895 and *S. cotti* Lessert, 1936. The male of *S. cotti* is described for the first time and *S. zuluanus* Lawrence, 1942 is recognized as a junior synonym of *S. cotti* and a new lectotype for *S. capensis* is designated.

Key words: Afrotropical Region, Araneae, new species, *Simorcus*, Thomisidae.

INTRODUCTION

In this paper, the ninth in a series on the spider family Thomisidae of the Afrotropical Region, the genus *Simorcus* Simon, 1895 is revised. *Simorcus* belongs to the subfamily Strophinae Simon, a small subfamily composed of nine genera and 30 species known from the tropics of the world, with five genera known from the Neotropical Region alone (Ono 1988). Only two genera, *Simorcus* and *Parastrophius* Simon, 1903 of the Strophinae, are known from the Afrotropical Region. Members of the Strophinae are characterized by their very long labia, absence of teeth in the cheliceral furrow, the carapace bearing strong setae, well-developed lateral eyes and long legs.

Simorcus is a small genus and prior to this study it was represented by five species (Platnick 2009). Members of *Simorcus* are small to medium-sized spiders characterized by the posterior region of the abdomen bearing distinct tubercles, the presence of distinct eye tubercles and a wide clypeus. The Afrotropical representatives of *Simorcus* have not been revised before, and four species were known prior to this study. Simon (1885) described the genus based on the type species, *S. capensis* Simon, 1895, from South Africa. In his short description of *Simorcus* he mentioned a second species, *S. cornutus*, but no description or the type of this species could be located and it is considered as *nomen nudum*.

Simon (1907) described a second species, *S. coronatus* Simon, 1907, from Zaire. Additional records were added from Ivory Coast by Lessert (1928) and Jézéquel (1964). The third species, *S. cotti* Lessert, 1936, came from Mozambique and the fourth, *S. zuluanus* Lawrence, 1942, from South Africa. The only other known species outside Africa, *S. asiaticus* Ono & Song, 1989, was described from China. Ono & Song (1989) suggested that *Simorcus* might have a wider distribution throughout India and South-east Asia.

Little is known about the behaviour of *Simorcus*. The material studied was collected mainly from bark and foliage, although a few were captured in pitfall traps and hand-collected from under rocks or on sand dunes. Their mottled grey and brown bodies camouflage them well, and they are not easily seen. One specimen was observed feeding on a *Camponotus* ant.

Two species groups are recognized, nine new species are described and two existing species redescribed. A key is provided for both males and females.

MATERIAL AND METHODS

The area covered by this study is the Afrotropical Region including Yemen and Madagascar. All available specimens were studied, and this paper is based on 250 specimens of which 93 were adults.

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Material was obtained from the following institutions: AM, Albany Museum, Grahamstown, South Africa; NCA, National Collection of Arachnida, ARC-Plant Protection Research Institute, Pretoria, South Africa; NM, Natal Museum, Pietermaritzburg, South Africa; NMB, National Museum, Bloemfontein, South Africa; MNHG, Muséum d'Histoire naturelle Genève, Switzerland; MRAC, Musée Royal de l'Afrique Centrale Tervuren, Belgium; SAM, Iziko South African Museum, Cape Town, South Africa; TM, Transvaal Museum, Northern Flagship Institution, Pretoria, South Africa; SMN, State Museum of Namibia, Windhoek, Namibia.

The description format and the abbreviations of morphological terms used in this paper follow those of Dippenaar-Schoeman (1983). The following abbreviations were used: AER, anterior eye row; ALE, anterior lateral eyes; AME, anterior median eyes; MOQ, median ocular quadrangle; PER, posterior eye row; PLE, posterior lateral eyes; PME, posterior median eyes; RTA, retrolateral tibial apophysis; VTA, ventral tibial apophysis. Measurements were taken with an ocular micrometer and are given in millimeters. For the total length, ranges are given for the smallest and largest specimen in the series studied.

TAXONOMY

Genus *SIMORCUS* Simon, 1895

Simorcus Simon, 1895: 964 (♀); Lessert 1923: 164, fig. 5–10 (♀,♂); Ono & Song 1989: 117, fig. 1–5 (♂,♀).

Type species. *Simorcus capensis* Simon, 1895 by original designation.

Diagnosis

Simorcus is characterized by a wide clypeus; elevated eye area bearing six tubercles, with some or all tubercles bearing strong setae (Fig. 4c,d); abdomen caudally obtuse bearing 20 or more large tubercles each with a short spiniform or long clavate seta (Fig. 4 a,b); rest of body rugose, covered with smaller tubercles each bearing setae; either leg I or II the longest. Male palp with cymbium bearing strong setae prolaterally and cymbial apophysis or tutaculum present.

Description

Body size. Females 3.8–1.0; males 3.0–5.8. No distinct sexual dimorphism, except smaller size of males.

Colour. Live specimens brown or grey, mottled with white or cream, colour fades in alcohol to yellow-brown; usually with distinct white or cream marks or lines on clypeus, proximal two-thirds of femora III and IV usually yellow-brown or without any marks; in most species variable quantities of white markings occur on all leg segments, palps and sternum.

Carapace. Longer than wide; rugose, covered with numerous tubercles each bearing short clavate or spiniform setae (Fig. 4c); number and position of tubercles vary between species; lateral edge finely serrated; fovea a slight depression. *Clypeus.* Wide, strongly sloping downwards; slightly concave, anterior edge bearing 4–12 strong setae, numbers vary between species (Figs 1d,h; 4c,d). *Sternum.* Shield-shaped, longer than wide (Fig. 4b). *Mouthparts.* Endites long and acute; labium twice or more longer than wide; narrow with tip acute, labium and endites covered with scattered short, black setae; cheliceral furrow edentate; dorsal surfaces each with 5–9 short, thick, erect black setae, that vary in number between species (Fig. 4c,d). *Eyes.* Small, on slightly raised tubercles; eye region elevated, decorated with six tubercles, each bearing either a spiniform or clavate seta that could be either short and stout or long and slender (Fig. 4c,d); eyes on tubercles arranged in two groups, each including the ALE, PLE & PME with AME in front of tubercles, PLE below posterolateral, outward-projecting tubercle; both AER and PER recurved; eyes in AER equidistant or AME closer to each other; PER with eyes equidistant or subequidistant; PLE and ALE larger than AME and PME; AME usually smaller than PME; MOQ trapezoid, narrower anteriorly than posteriorly; variable being longer than wide or wider than long. *Abdomen.* Longer than wide (except *S. capensis*); caudally obtuse bearing 20 or more large tubercles, each bearing a short, stout, spiniform or long, slender, clavate seta (resembles *Phrynarachne* spp.); lateral sides and mid-dorsum with smaller tubercles; ventrum: ventrolaterally with longitudinal striae; central area smooth, bearing fine hairs. *Spinnerets.* Short, conical, anterior and posterior spinnerets same size. *Legs.* Long with numerous setae but without strong spines; formula I–II–IV–III or II–I–IV–III or I and II same length; front legs positioned sideways and hind legs backwards; femora III usually broadly flattened and armed with large tubercles each bearing strong seta on both anterior and posterior edge; femora of

other legs armed with smaller tubercles and setae, more abundant on anterior edge; tarsi with two claws and reduced claw tufts. *Female palp*. Tibia and tarsus bearing short black setae, more abundant and stronger on inner surfaces; tarsus triangular and dorsoventrally flattened (Fig. 4c,d). *Genitalia*. Female with epigyne simple; an atrium present, shape species-specific; two small sclerotized marks close to each other indicating position of fertilization ducts, usually visible posteriorly; copulatory duct and spermathecae long and tubular (Fig. 2o) or sac-like (Fig. 1b). Male palp (Fig. 5): tibia broader than long; tarsus with strong pro-lateral setae; VTA long, digitiform and curved (Fig. 3a); RTA larger (Fig. 3d), shape species-specific; cymbium rounded, more or less as long as wide with strong setae prolaterally; cymbial apophysis or tutaculum present (Fig. 3d), varies between species; bulb circular without apophysis; embolic division long, usually winding twice around tegulum, in some species broad and darkly sclerotized; tip spiniform.

Distribution. Afrotropical Region: Democratic Republic of Congo (DRC), Guinea Bissau, Ivory Coast, Mozambique, South Africa. Oriental Region: Zhejiang, China. *New records*: Afrotropical Region: Botswana, Congo, Guinea, Namibia, Tanzania, Togo and Yemen.

Natural history. Little is known about their general behaviour. Specimens have been collected by beating, sweeping and pitfall traps. They are found on foliage and bark of trees, shrubs and herbs mainly from the Forest, Savanna and Fynbos biomes.

Species groups

Based on their external morphology and structure of the copulatory organs, members of *Simorcus* can be separated into the following two species groups:

Simorcus capensis group

Abdomen with very large clavate, semi-erect body setae, some projecting posteriorly beyond body (Fig. 1d); clypeal edge bearing four clavate setae (Fig. 1d); epigyne with central crescent-shaped, sclerotized bar (Figs 1a, 2a); male palpal tibia with short dentate RTA (Figs 1c, 3a, 5a).

Represented by: *S. capensis* (South Africa, Tanzania) and *S. haddadi* sp. n. (South Africa).

Simorcus cotti group

Abdomen with very small clavate setae, never projecting beyond body (Fig. 1h); clypeal edge with 4–14 spiniform setae (Figs 1h, 4d); epigyne simple with spermathecae visible externally as round or oblong structures (Fig. 1f); male palpal tibia with long, smooth RTA (Figs 1e, 5a).

Represented by: *S. cotti* (Mozambique, South Africa, Swaziland, Tanzania), *S. coronatus* (DRC, Guinea Bissau, Ivory Coast, Togo), *S. cummingae* sp. n. (Zimbabwe, Botswana), *S. guinea* sp. n. (DRC, Guinea), *S. hakos* sp. n. (Namibia), *S. itombwe* sp. n. (DRC), *S. kalemie* (DRC), *S. lotzi* sp. n. (South Africa, Namibia, Botswana), *S. okaavango* sp. n. (Botswana) and *S. vanharteni* sp. n. (Tanzania, Yemen).

Key to the Afrotropical species of *Simorcus*

Females

1. Abdomen bearing very large, clavate, semi-erect setae, some projecting beyond abdomen (Fig. 1d); clypeus with four clavate setae; epigyne with central crescent-shaped bar (Fig. 1a) 2
 - Abdomen covered with small clavate body setae, never projecting beyond abdomen (Figs 1h, 4b); clypeus with 4–14 spiniform setae; epigyne not as above 3
2. Abdomen wider than long; carapace with posterior row of four tubercles (Fig. 1d); internal genitalia not externally visible, spermathecae sac-like (Fig. 1a,b) *S. capensis* Simon
 - Abdomen longer than wide; carapace with posterior row of six tubercles; internal genitalia externally visible as bean-shaped structures, spermathecae irregularly shaped (Fig. 2a,b) *S. haddadi* sp. n.
3. Clypeal edge with 12 short, spiniform setae (Fig. 4d); white clypeal mark with concave sides; epigyne with heart-shaped atrium, copulatory openings C-shaped, bordered by strongly sclerotized ridges (Fig. 1f,g) *S. cotti* Lessert
 - Clypeal edge with 4–8 long setae; clypeal mark absent or variously shaped; epigyne not as above. 4.
4. Clypeal edge with four setae 5
 - Clypeal edge with 7–8 setae 6
5. Clypeus without any markings; copulatory openings very narrow; copulatory ducts ovate-oblong; spermathecae close together,

- round with fertilization duct sinuous medially, close together (Fig. 2c,d) *S. guinea* sp. n.
- Clypeus with lines; copulatory openings funnel-like; copulatory ducts sac-like, broadly C-shaped; spermathecae small, irregularly in shape (Fig. 2e,f). *S. hakos* sp. n.
- 6. Clypeus with distinct white mark with convex sides; copulatory openings two indistinct semi-circles; copulatory ducts large oval reddish brown structures (Fig. 2g,h) *S. okavango* sp. n.
- Clypeus and genitalia not as above. 7
- 7. Clypeus without markings; epigyne with V-shaped atrium; copulatory ducts visible as two dark brown spherical structures on epigynal plate (Fig. 2i,j) *S. coronatus* Simon
- Clypeus with irregular mark or lines 8
- 8. Spermathecae two-lobed (Fig. 2l); copulatory ducts two oblong structures, anteriorly narrowed, tips slightly sclerotized (Fig. 2k,m) *S. cummingae* sp. n.
- Spermathecae tubular and sinuous (Fig. 2o); epigyne with small mushroom-shaped anterior atrium; copulatory ducts two oblong structures; anteriorly with narrowed tips slightly sclerotized on inner edges (Fig. 2n) *S. vanharteni* sp. n.
- 5. Cymbial apophysis with twisted, forked tip, (Figs 1e, 5b) *S. cotti* Lessert
- Cymbial apophysis not as above 6
- 6. RTA long with acute tip (Figs 3e–f, 5c, 5h) 7
- RTA not as above 8
- 7. Triangular tutaculum present; cymbial apophysis absent (Figs 3e, 5c) *S. cummingae* sp. n.
- Tutaculum absent; cymbial apophysis hook-shaped (Figs 3f, 5h) *S. vanharteni* sp. n.
- 8. RTA short, with straight tip not extending beyond triangular tutaculum (Figs 3g, 5e) *S. kalemie* sp. n.
- RTA long, with curved tip extending beyond hook-like cymbial apophysis, (Figs 3h, 5f) *S. lotzi* sp. n.

***Simorcus capensis* group**

***Simorcus capensis* Simon, 1895, Figs 1a–d, 5a, 6b**

Simorcus capensis Simon, 1895: 964 (D♀); Lessert 1923: 164, figs 5–10 (♀, D♂); Ono & Song 1989: 117, figs 1–5, (D♀, ♂).

Diagnosis

Species recognized by round abdomen, wider than long, with large abdominal tubercles each bearing a long, stout clavate, semi-erect seta, some setae projecting beyond posterior edge of abdomen (Fig. 1d); clypeal edge with four clavate setae; clypeal mark absent; eye tubercles bearing stout clavate setae of equal length. Female epigyne oval plate, slightly longer than wide, with central sclerotized reddish brown, crescent-shaped bar (Fig. 1a). Male palpal tibia with short, dentate RTA (Figs 1c, 5a). Resembles *S. haddadi* sp. n. closely in that the male palps are very similar but they differ in the shape of the abdomen, the number of tubercles on the carapace and general structure of female genitalia.

Redescription

Female. Size ($n = 3$): TL 4.3 (3.8–4.9); CW 1.7; CL 1.8; AME 0.06; ALE 0.12; PME 0.06; PLE 0.14; AME–AME 0.14; AME–ALE 0.14; PME–PME 0.29; PME–PLE 0.27; MOQ: AME–PME 0.28; AME–AME 0.17; PME–PME 0.32.

Colour. Carapace brown, mottled with white. Abdomen brown, mottled with white. Legs: all legs yellow-brown with white spots, reduced towards tarsi; femora III and IV with distal half

Males

- 1. Palpal tibia with short, dentate RTA (Figs 1c, 5a); clypeal edge bearing clavate setae 2
- Palpal tibia with long, smooth RTA (Figs 1e, 5b); clypeal edge bearing spiniform setae. 3
- 2. Abdomen wider than long (Fig. 1d); carapace with posterior row of four tubercles; with short triangular tutaculum and short dentate RTA (Figs 1c, 5a) *S. capensis* Simon
- Abdomen longer than wide; carapace with posterior row of six tubercles; with short triangular tutaculum and short dentate RTA (Figs 3a, 5d). *S. haddadi* sp. n.
- 3. Palp with long, curved cymbial apophysis (Figs 3b–d, 5g) 4
- Palp with short cymbial apophysis or tutaculum (Fig. 3e–h) 5
- 4. Cymbial apophysis slightly curved at tip; RTA short, not projecting beyond cymbial apophysis (Fig. 3b,c) *S. coronatus* Simon
- Cymbial apophysis well developed, tip curved posteriorly; RTA long, projecting far beyond cymbial apophysis (Figs 3d, 5g) *S. itombwe* sp. n.

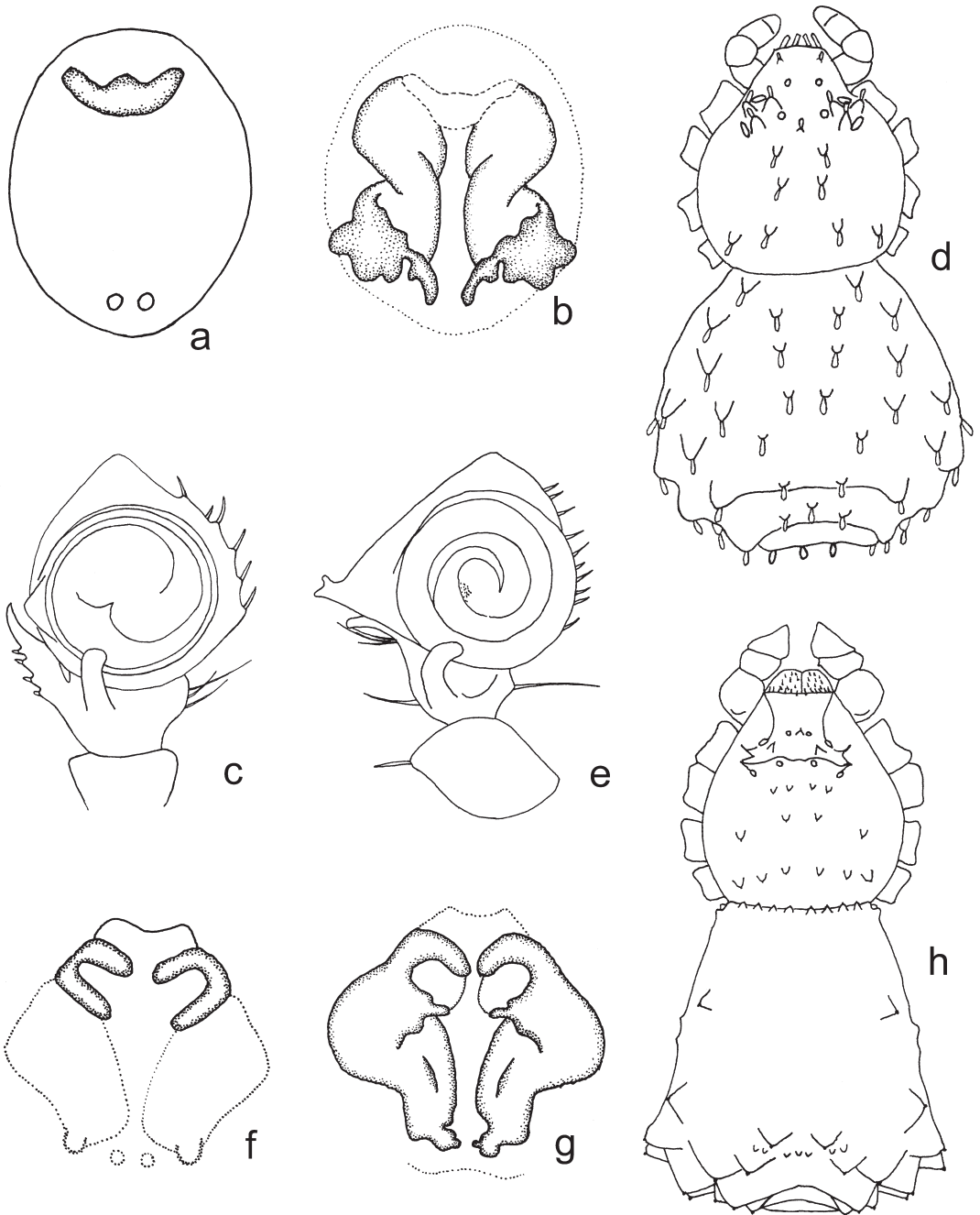


Fig. 1. *Simorcus capensis*: a, epigyne, vv; b, epigyne, dv; c, male palp, vv; d, female dv. *Simorcus cotti*: e, male palp, vv; f, epigyne, vv; g, epigyne, dv; h, female dv. vv = ventral view, dv = dorsal view.

white, or with large white marks; variable quantities of white markings occur on all leg segments, palps and sternum.

Carapace. Three small tubercles with clavate setae behind PER; thoracic area centrally with two large tubercles and recurved row of four tubercles posteriorly. **Mouthparts.** Chelicerae dorsally with five short setae. **Clypeus.** Clypeal edge with four clavate setae, followed by second row of two. **Eyes.** MOQ wider than long. **Abdomen.** Dorsum with sparse covering of short, clavate setae. **Legs.** I longest; leg lengths (average, $n = 2$): leg I 5.65, leg II 4.00, leg III 2.80, leg IV 3.60. All segments except tarsi covered with short clavate setae and hairs, some hairs arranged in longitudinal rows; tarsi with hair only. **Epigyne.** Oval plate, slightly longer than wide; reddish brown crescent-shaped sclerotized bar about one-third from anterior edge with copulatory openings at lateral ends (Fig. 1a); copulatory ducts sac-like, laterally with deep indentation, broadly attached to sac-like spermathecae (Fig. 1b).

Male. Size ($n = 1$): TL 2.90; CW 1.35; CL 1.40; AME 0.08; ALE 0.10; PME 0.08; PLE 0.10; AME-AME 0.08; AME-ALE 0.13; PME-PME 0.20; PME-PLE 0.18; MOQ: AME-PME 0.25; AME-AME 0.12; PME-PME 0.24.

Abdomen. Round, similar to female but appears more rugose due to larger size of tubercles, which are more prominent caudally and laterally. **Legs.** I-II-IV-III, leg lengths ($n = 1$): leg I 5.40, leg II 3.65, leg III 2.45, leg IV 2.85. **Male palp.** RTA with outer edge bearing four small teeth-like tubercles, apical one longest with tip curving backwards; tutaculum short, triangular, projecting laterad (Figs 1c, 5a).

Juvenile. Resembles adults in shape and colour.

Type. Type series 3♀, 2♂. SOUTH AFRICA: only labeled as 'Cape Colony', no exact locality, MNHN 17317. One of the males is here designated as a new lectotype.

Material examined. SOUTH AFRICA: *Eastern Cape Province*: 3♀, 2 imm. ♀, 1♂, Alicedale, 33°18'S 26°05'E, ii.1916, F. Cruden (MNHG); 1♀, Kudu Nature Reserve, Grahamstown, 33°07'S 26°37'E, 10.iv.1981, P. Croeser (NCA 1988/599); 1 imm., Howieson's Poort, 33°21'S 26°29'E, 13.xi.1974, on *Helichrysum* sp., C. Colijn (NCA 1976/228); 1♂, 1 imm., Farm Bucklands, border of Great Fish River Wetlands Reserve, 33°48'S 27°13'E, 3.x.1993, on soil, pitfall, M. Burger (NCA 96/35). TANZANIA: 1♀, Kasanga, 7°12'S 37°43'E, 1.i.1970, A. Coetzee (NCA 1988/595).

Distribution. South Africa. *New record*: Tanzania (Fig. 6b).

Natural history. Adult females were collected in February and April and adult males in February. One specimen was collected from *Helichrysum* sp. flowers.

***Simorcus haddadi* sp. n., Figs 2a–b, 3a, 5d, 6a**

Diagnosis

Species is recognized by longer than wide abdomen, with large abdominal tubercles each bearing a long stout semi-erect clavate seta, some setae projecting beyond posterior edge of abdomen; clypeal edge with four clavate setae; clypeal mark absent; eye tubercles bearing stout, clavate setae of equal length. Female epigyne a central crescent-shaped sclerotized bar (Fig. 2a). Male palpal tibia with short, dentate RTA; short triangular tutaculum, projecting laterad (Figs 3a, 5d). Resembles *S. capensis* closely with male palps very similar, however they differ in the shape of the abdomen, the number of tubercles in posterior row on carapace and the female genitalia.

Description

Female. Size ($n = 5$): TL 4.7 (4.1–5.6); CW 1.6; CL 2.14; AME 0.06; ALE 0.12; PME 0.08; PLE 0.12; AME-AME 0.1; AME-ALE 0.11; PME-PME 0.2; PME-PLE 0.22; MOQ: AME-PME 0.23; AME-AME 0.14; PME-PME 0.22.

Colour. Fresh specimen preserved for less than six months dark brown; carapace (preserved specimens) yellow-brown, mottled with white, darker in cephalic area. Abdomen yellow-brown mottled with white, dorsally with brown spots. Legs: all legs yellow-brown with white spots, marks becoming fewer towards tarsi; femora III and IV with alternating white and brown marks; variable quantities of white markings occur on all segments of legs (except tarsus), palps and sternum.

Carapace. Six small tubercles with clavate setae behind PER; thoracic area centrally with two larger tubercles and a recurved row of six tubercles posteriorly. **Mouthparts.** Chelicerae dorsally with six short setae. **Clypeus.** Clypeal edge with four long clavate setae, followed by second row of three. **Eyes.** MOQ longer than wide. **Abdomen.** Dorsum with sparse covering of short, clavate setae; bases of some setae surrounded by dark spot, giving abdomen spotted appearance. **Legs.** I-II-IV-III; leg lengths (average, $n = 4$): leg I 7.88,

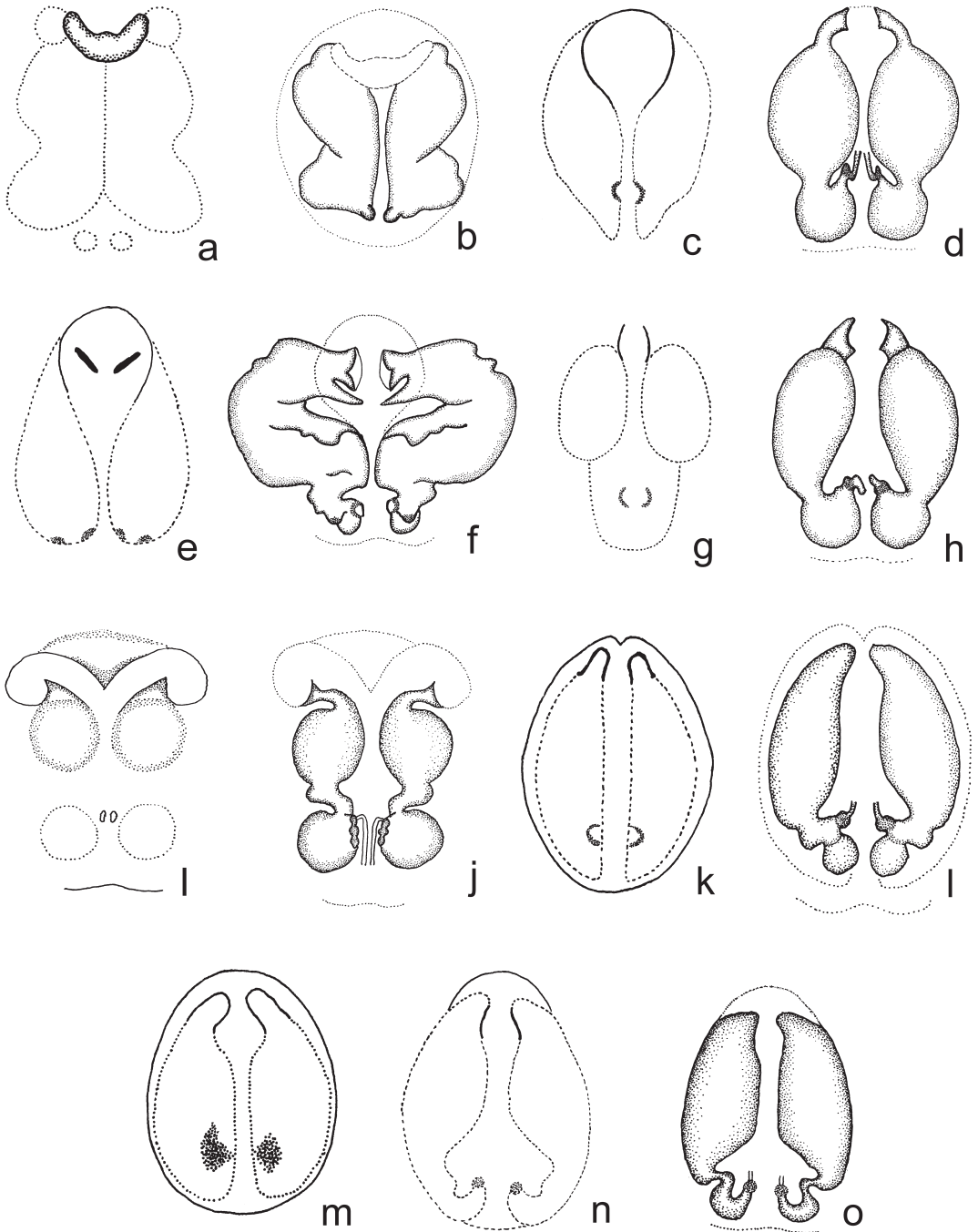


Fig. 2. Female genitalia. *Simorcus haddadi*: **a**, epigyne, vv; **b**, epigyne, dv. *S. guinea* paratype: **c**, epigyne, vv; **d**, epigyne, dv. *S. hakos* holotype: **e**, epigyne, vv; **f**, epigyne, dv. *S. okavango* holotype: **g**, epigyne, vv; **h**, epigyne, dv. *S. coronatus* MRAC 136.106: **i**, epigyne, vv; **j**, epigyne, dv. *S. cummingae* paratype NCA 2004/724: **k**, epigyne, vv; **l**, epigyne, dv; **m**, epigyne, vv, showing variation. *S. vanharteni*: **n**, epigyne, vv; **o**, epigyne, dv. vv = ventral view, dv = dorsal view.

leg II 6.41, leg III 3.31, leg IV 4.75; each segment with numerous clavate setae and hairs, especially distally; fine clavate hairs arranged in longitudinal lines on all segments. *Palp.* Clavate setae on coxa and trochanter. *Epigyne.* Oval plate longer than wide; with reddish brown, crescent-shaped, sclerotized bar about one-third from anterior edge; below bar spermathecae visible as bean-shaped brown structures (Fig. 2a); copulatory ducts sac-like, laterally with deep indentation, broadly attached to irregularly shaped sclerotized spermathecae (Fig. 2b).

Male. Size ($n = 7$): TL 3.7 (3.3–4.3); CW 1.38; CL1.69; AME 0.05; ALE 0.11; PME 0.09; PLE 0.11; AME–AME 0.09; AME–ALE 0.10; PME–PME 0.19; PME–PLE 0.19; MOQ: AME–PME 0.26; AME–AME 0.13; PME–PME 0.23.

Abdomen. More slender than in female, almost sub-rectangular rather than trapezoid; rugose appearance due to larger size of prominent tubercles. *Legs.* I–II–IV–III, leg lengths (average, $n = 7$): leg I 7.90, leg II 5.31, leg III 2.81, leg IV 3.97. *Palp.* RTA with four teeth-like tubercles, apical tooth longer, curving backwards; cymbial apophysis short, triangular, projecting laterad (Figs 3a, 5d).

Juveniles. Resemble adults in shape and colour.

Etymology. Named after Charles Haddad in recognition of his contribution to spider research in Africa.

Types. Holotype δ , SOUTH AFRICA: *Western Cape Province*: with 2 δ paratypes, Sedgfield, Ruigtevlei, 34°00'S 22°46'E, 1.ix.1984, fynbos, R.J. Dowsett (MRAC166.145). Paratypes: 1 δ , Buffelsbay, 34°19'S 18°26'E, 25–29.x.1985, pitfall trap in sand dunes, C. Griswold e.a. (NM); 1 δ , Houtbay, 34°04'S 18°22'E, 13.xii.1970, A. Venter (NCA 1988/649); 2 δ , 2 δ , 8 imm.; Bergvliet, Diep River, 34°04'S 18°28'E, 2.vi.1915, W.F. Purcell & R.W. Tucker (SAM B1195); 1 δ , Top of Kalkbay Mountains, 34°07'S 18°26'E, iii.1901, W.F. Purcell (SAM 9164); 1 δ , 3 δ , 7 imm., same locality, ii.1902, W. Purcell (SAM 12308); 2 δ , 5 imm., Houtbay, Bergvliet Flats, Diep River, Constantia area, 34°04'S 18°22'E, x.1899, W.F. Purcell (SAM 6198); 1 δ , 1 δ , 1 imm., Table Mountain N slope, Cape Town, 33°56'S 18°28'E, vi.1896, F. Purcell (SAM 812); 1 δ , same locality, 7.ii.2006, fynbos, J. Pryke (NCA 2008/765); 1 δ , same locality, 7.ii.2006, fynbos, J. Pryke (NCA 2008/764); 1 imm., De Hoop Nature Reserve, Potberg, 34°22'S 20°32'E, 7.iv.2004, under rocks, among fynbos, C. Haddad (NCA 2005/1426); 1 δ , same locality, 1–15.xiii.1991, northern dunes, R.

Legg (MRAC173.890); 2 imm. δ , Swellendam, Marloth Nature Reserve, 33°59'S 20°27'E, 25.ix.2007, leaf litter, fynbos, C. Haddad & R. Lyle (NCA 2005/1427, 2008/250).

Other material examined. SOUTH AFRICA: *Western Cape Province*: 1 imm., Houtbay, Bergvliet Flats, Diep River, Constantia area, v.1939, W.F. Purcell (SAM 9859); 1 imm., Bergvliet, Diep River, 34°04'S 18°28'E, xii.1899, W. Purcell (SAM150.086); 1 imm., Bergvliet, Diep River, 34°04'S, 18°28'E, ix.1904, W. Purcell (SAM 1419.1); 1 imm., Muizenberg, 34°07'S 18°28'E, 10–25.x.1991, northern dunes, R. Legg (MRAC173.844); 1 imm., Brenton-on-Sea, 34°06'S 23°02'E, 5–9.xii.1996, pitfall traps, coastal fynbos, ecotone dominated by broad-leaf shrubs, H.G. Robertson (SAM 6013); 3 imm., Cape of Good Hope Nature Reserve, Olifantsbos nr Skaife Centre, 34°15'S 18°23'E, 20 m a.s.l., x.1998, Strandveld Mountain fynbos ecotone dense bush, Winkler leaf litter trap, H.G. Robertson (SAM 6014).

Distribution. South Africa (Fig. 6a).

Natural history. *Simorcus haddadi* has been collected with pitfall traps, Winkler leaf litter traps and hand-collecting mainly from the Fynbos Biome and coastal dune areas. Adult females were collected in February, April and June and males in January, June, October to December.

Simorcus cotti group

Simorcus coronatus Simon, 1907, Figs 2i–j, 3b–c, 6b

Simorcus coronatus Simon, 1907: 311 (D δ); Lessert 1928: 303, figs 1–2, (δ); Jézéquel 1964: 1106, figs 3a–c, (D δ).

Diagnosis

This species is recognized by large abdominal tubercles each bearing very small spiniform setae; clypeal edge with seven spiniform setae; clypeus with a white mark with convex sides or without clear markings; eye tubercles with stout, spiniform setae of unequal length. Epigyne with V-shaped atrium (Fig. 2i). Male palpal tibia with long backward directed curved RTA and long cymbial apophysis curving dorsolaterally (Figs 3b,c). Male palp resembles that of *S. itombwe* (Fig. 3d) closely in both having a long curved cymbial apophysis, but *S. itombwe* has a much longer cymbial apophysis and RTA, RTA projecting far beyond cymbial apophysis.

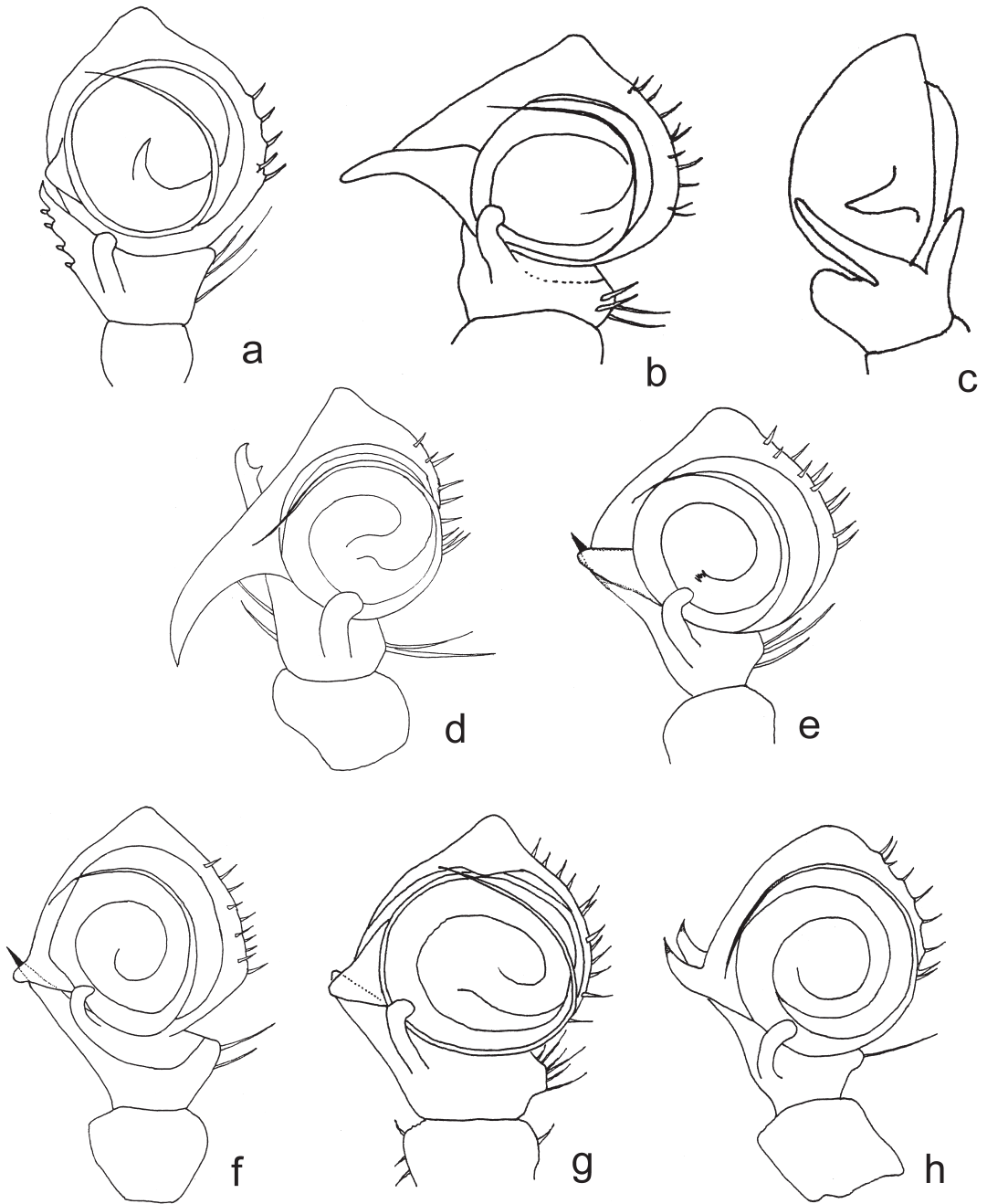


Fig. 3. Ventral view of male palps. **a**, *Simorcus haddadi*; **b**, *S. coronatus* (after Jézéquel 1964); **c**, *S. coronatus*, lv (after Jézéquel 1964); **d**, *S. itombwe* holotype; **e**, *S. cummingae* paratype NCA 2004/724; **f**, *S. vanharteni*; **g**, *S. kalemie*; **h**, *S. lotzi* holotype. lv = lateral view.

Redescription

Female. Size ($n = 8$): TL 6.7; CW 2.16; CL 2.97; AME 0.06; ALE 0.14; PME 0.08; PLE 0.14; AME–AME 0.13; AME–ALE 0.16; PME–PME 0.25; PME–PLE 0.25; MOQ: AME–PME 0.30; AME–AME 0.16; PME–PME 0.29.

Colour. Carapace and legs reddish brown, mottled with cream, darker in cephalic area; chelicerae brown with broad white band across centre; labium yellow-brown; sternum mottled with cream. Abdomen dorsally yellow-brown, mottled with white; venter with longitudinal cream striae, central area reddish brown. Colour variation observed in specimens described by Lessert (1928) from Faradje, where abdomen is black anterolaterally and carapace dark brown, laterally edged with yellow-brown.

Carapace. Two small tubercles behind PER; thoracic area centrally with several tubercles; posteriorly with six tubercles in recurved row, four lateral tubercles much larger than rest. *Mouthparts.* Chelicerae dorsally with 8–9 short setae. *Eyes.* Eye tubercles prominent; MOQ length to width variable. *Abdomen.* Much longer than wide, not much wider across posterior quarter; with finely granulated appearance; dorsum sparsely covered with very short clavate setae. *Legs.* II–I–IV–III; leg lengths (average, $n = 5$): leg I 8.95, leg II 9.08, leg III 4.48, leg IV 7.05; all segments except tarsi covered with setae and hairs, some hairs arranged in longitudinal rows, tarsi with hair only. *Epigyne.* V-shaped atrium; copulatory ducts visible as two dark brown spherical structures on epigynal plate (Fig. 2i); copulatory openings funnel-like; copulatory ducts ovate, connected by sinuous tube to round spermathecae (Fig. 2j).

Male. No material was available for examination, description based on description by Jézéquel (1964) from the Ivory Coast. *Colour.* Cephalothorax and legs reddish brown, mottled with cream, darker in cephalic area. *Abdomen.* Dorsum greyish brown, mottled with cream; venter with cream lateral striae, centrally reddish brown; variant colour forms found among males (Jézéquel 1964). *Palp.* RTA long and more or less straight, curving backwards, sometimes with sub-apical tooth; cymbial apophysis long, horizontally projecting, curving dorsolaterally (Fig. 3b–c).

Type. Holotype ♀, Guinea Bissau: Bolama, 11°35'N15°28'W, F. Fea (MNHG).

Male paratype not examined.

Material examined. DRC: 7♀, Faradje, 3°43'N

29°43'E, (MNHG); 2 imm. ♀, 1 imm. ♂, Garamba National Park, 4°10'N 29°30'E, American Museum expedition (MRAC 222.221). TOGO: 1♀, Aledji, 6°58'N 1°18'E, 20.vii.1969, F. Puylaert (MRAC 136.106). IVORY COAST: 1 imm. ♀, Kossou, 6°58'N 5°28'W, 23.v.1975, R. Jocquè (MRAC 152.923); 1 imm. ♂, same locality (MRAC 149.626).

Distribution. DRC, Guinea Bissau. New records: Ivory Coast, Togo (Fig. 6b).

Natural history. Females were collected during July.

Remark. According to P.T. Lehtinen (pers. comm.) there might be a third species in the *S. itombwe*–*S. coronatus* complex but it could not be confirmed during this study.

Simorcus cotti Lessert, 1936, Figs 1e–h, 4, 5b, 6a

Simorcus cotti Lessert, 1936: 251, figs 46–48, (D♀).

Simorcus zuluanus Lawrence, 1942: 147, fig. 4, (D♀), **syn. n.**

Diagnosis

This species is recognized by the large abdominal tubercles each bearing very small spiniform setae (Figs 4a,b); clypeal edge with 12 (10–14) spiniform setae; clypeal mark trapezoid with concave lateral sides (Fig. 4c,d); eye tubercles very distinct, horn-like, with unequally sized, stout, spiniform setae. Female epigyne with heart-shaped atrium; copulatory openings C-shaped bordered by strongly sclerotized ridges (Fig. 1f). Male palpal tibia with long RTA curving retrolaterally; cymbial apophyses with a forked and twisted tip, directed laterad, embolus broad and darkly sclerotized doughnut-shaped (Fig. 5b) that resembles that of *S. lotzi* sp. n. (Fig. 5f).

Redescription

Female. Size ($n = 10$): TL 7.3 (6.2–9.4); CW 2.44; CL 3.22; AME 0.05; ALE 0.13; PME 0.08; PLE 0.13; AME–AME 0.19; AME–ALE 0.23; PME–PME 0.40; PME–PLE 0.31; MOQ: AME–PME 0.44; AME–AME 0.29; PME–PME 0.56.

Colour. Carapace yellow-brown, mottled with white; cephalic area brown; proximal half of chelicerae white and distal half dark brown. Abdomen mottled white and grey, posterior part of abdomen with irregular black markings. Legs mottled white and yellow-brown; dorsally predominantly white; femora ventrally with proximal dark brown patches; distally with white triangular

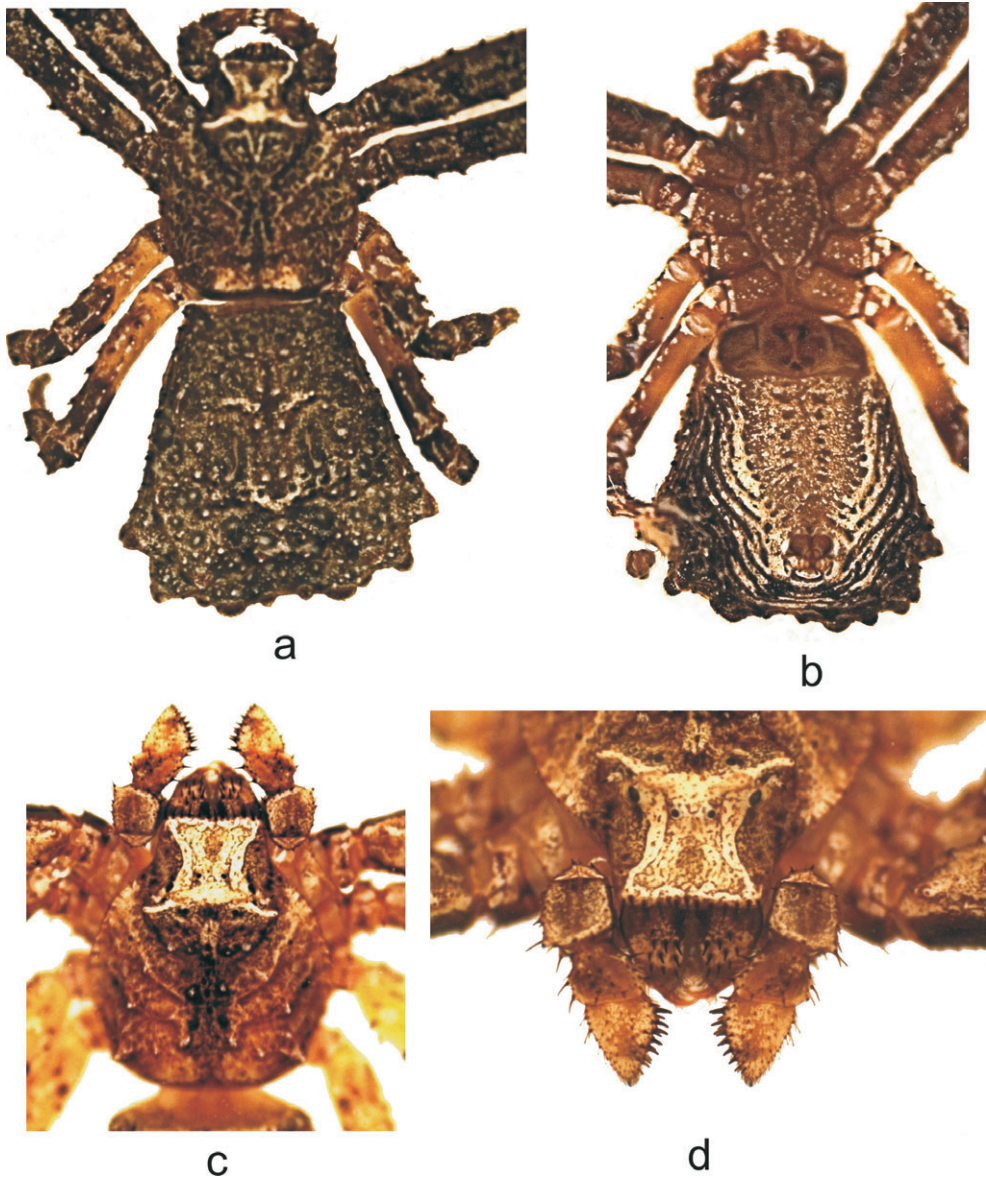


Fig. 4. Female of *Simorcus cotti*. **a**, Body, dv; **b**, body, vv; **c**, carapace, av; **d**, eye region av. av = anterior view, vv = ventral view, dv = dorsal view.

mark with a dark grey triangular patch superimposed on white triangle on leg I and II; coxae distally with single dark brown spot; variable quantities of white markings occur on all segments of legs, palps, sternum, endites and labium. Palps yellow brown, mottled with white, except tarsus, which is white.

Carapace. Four small tubercles behind PER; thoracic area centrally with four tubercles and

posteriorly with six tubercles, in recurved rows. **Mouthparts.** Chelicerae dorsally with nine short setae, arranged in three short transverse rows of three each. **Eyes.** PEs and ALEs situated on elevated ridge, which is decorated with six horn-like tubercles, four tubercles occur on edge of ridge, directed outwards, and two in front, directed forwards (Figs 1h, 4c–d); MOQ wider than long. **Abdomen.** Shape trapezoid, widest

posteriorly; dorsum sparsely covered with short clavate setae. *Legs.* Leg I or II longest; leg lengths (average, $n = 10$): leg I 9.67, leg II 9.87, leg III 5.13, leg IV 6.34; femora, patellae, tibiae and metatarsi with tubercles with short setae along posterior edge, or along both edges of femora; all segments except tarsi III and IV covered with setae and hairs, some hairs arranged in longitudinal rows. *Epigyne.* Heart-shaped atrium centrally, extending over length of epigynal plate; copulatory openings bordered by strongly sclerotized ridges (Fig. 1f); spermathecae visible as two reddish brown structures; copulatory openings C-shaped; copulatory ducts sac-like but narrows posteriorly; spermathecae small and round (Fig. 1g).

Male. Size ($n = 10$): TL 4.9(4.4–5.8); CW 1.9; CL2.2; AME 0.04; ALE 0.1; PME 0.06; PLE 0.11; AME–AME 0.14; AME–ALE 0.17; PME–PME 0.28; PME–PLE 0.26; MOQ: AME–PME 0.34; AME–AME 0.23; PME–PME 0.41.

Abdomen. More slender than in female, subrectangular rather than trapezoid, appears more rugose due to larger size of tubercles; tubercles prominent on both posterior and lateral edge. *Eyes.* MOQ variable. *Legs.* Either leg I or II longest; leg lengths (average, $n = 10$): leg I 8.00, leg II 8.02, leg III 4.23, leg IV 4.91; tarsi I and II only with hairs. *Palp.* RTA long, curved anterolaterally; cymbial apophyses with forked, twisted tip, directed laterally; embolus broad and darkly sclerotized (Figs 1e, 5b).

Types. Holotype ♀, MOZAMBIQUE: Chiramba, 16°53'S 34°39'E, P. Lesne (NMHG); imm. paratypes, Vola Pery, 19°6'S 33°28'E, P. Lesne (MNHG). Holotype ♀ of *S. zuluanus*, SOUTH AFRICA: Kosi Bay, 27°0'S 32°50'E, R.F. Lawrence (NM1983); paratype ♀, same locality (NM 1988).

Material examined. TANZANIA: 1♂, Mkomazi Game Reserve, 4°37'S 38°4'E, 11–28.xi.1994, A. Russell-Smith (MRAC 215539). MOZAMBIQUE: 1♂, Marracuene Lodge, 25°11'S 33°30'E, 1.xii.2007, riverine forest, beating shrubs, R. Lyle & R. Fourie (NCA 2005/1421); 1♂, 1 imm., Chidenguele Prasoide, 24°57'S 34°11'E, 38 m a.s.l., 15.xii.2007, dune forest, beating shrubs and night collecting, R. Lyle, R. Fourie & C. Haddad (NCA 2005/1422; 2005/1424); 1♂, Xai-Xai Montego's Camp, 25°03'S 33°40'E, 28 m a.s.l., 2.xii.2007, dune forest, beating shrubs, R. Lyle & R. Fourie (NCA 2005/1423); 1♀, 1 imm., Bartholomew Diaz Point, 21°10'S 35°06'E, 5 m a.s.l., 10.xii.2007, leaf litter, mangroves, R. Lyle, R. Fourie & C. Haddad (NCA 2005/1425). SWAZI-

LAND: no exact locality, i.1955, A. Capener, 1♀, NM 6386. SOUTH AFRICA: *KwaZulu-Natal*: 1 imm., Kosi Bay, 27°0'S 32°50'E, Toppin (NM 1794); 1♀, same locality, NM1988; 1 imm. ♀, Dukuduku forest, 28°22'S 32°19'E, xii.60, R.T. Lawrence (NM 8041); 2♂, 6 imm., HellsGate Tsetse Research Station, 28°02'S 32°25'E, 8.xi.2004, J. Esterhuizen (NCA 2005/1401; 2005/1402; 2005/1403; 2005/1404); 1 imm., same locality, 2.iii.2007, P. van Niekerk (NCA 2005/1408); 1 imm., Charter's Creek, near Camp, 28°07'S 32°22'E, 20.iv.1978, herb layer, P. Reavell (NM); 1♀, Ndumu Game Reserve, 27°38'S 32°03'E, 14.i.1980, from dense *Panicum* spp., P. Reavell (NM13273); 1♀, 1 imm. ♀, same locality, 9.ii.2006, foliage, C. Haddad (NCA 2005/28); 1 imm. ♂, Mkuzi Game Reserve, 27°36'S 32°9'E, 11.xii.2004, fever tree forest, beating, M. Hamer (NCA 2005/2087); 1 imm. ♂, same locality, 8.xi.2004, *Acacia nigrescens* woodland, beating, M. Hamer (NCA 2005/2088); 1 imm., same locality, 26.i.2005, woodland, beating *Acacia grandicornuta*, M. Hamer (NCA 2005/2089); 1 imm., same locality, 27.xi.2003, tree beating, M. Hamer (NCA 2004/880); 1 imm. ♀, same locality, 24.iii.2004, tree beating, M. Hamer (NCA 2004/881); 3 imm., same locality, 19.xi.2002, *Terminalia sericea* beating, S. Lovell (NCA 2003/1509); 1♀, same locality, 21.i.2005, *Terminalia sericea* woodland, M. Hamer (NCA 2006/261); 2 imm., same locality, 26.i.2005, short open woodland, *Acacia grandicornuta*, beating, M. Hamer (NCA 2006/262); 1 imm., same locality, 26.i.2005, *Acacia nilotica* and *A. tortilis* woodland, beating, M. Hamer (NCA 2006/268); 2 imm. ♀, same locality, 11.xii.2004, *Acacia xanthophloea*, beating, M. Hamer (NCA 2006/77); 4 imm., farm Vergeval, Pongola, 28°55'S 31°21'E, iii–vi.1968, *Acacia tortilis*, beating, A.S. Dippenaar-Schoeman (NCA 77/836); 2 imm., same locality, 1.vi.1968, *Acacia tortilis*, beating, A.S. Dippenaar-Schoeman (NCA 76/1064); 1 imm., Pongola, 27°21'S 31°36'E, near Golela River, 19.viii.1980, creeper, M.K.P. Meyer (NCA 88/598); 1♀, Phinda Game Reserve, 27°47'S 32°18'E, 28.i.2004, M. Hamer (NCA 2004/882); 1♂, 1 imm., same locality, 20.xi.2002, *Aloe marlothii*, S. Lovell (NCA 2003/1533); 1 imm., Hluhluwe (20 km from) on Mathubathuba road, 28°6'S 32°16'E, 30.iii.1977, grass sweeping, A.S. Dippenaar-Schoeman (NCA 77/666); 15 imm., Tembe Elephant Park, 26°53'S 32°34'E, 15.iii.2003, woodlands, beating, A. Honiball (NCA 2003/1452); 1♀, same locality, 10.i.2002, open woodland beating short shrubs,

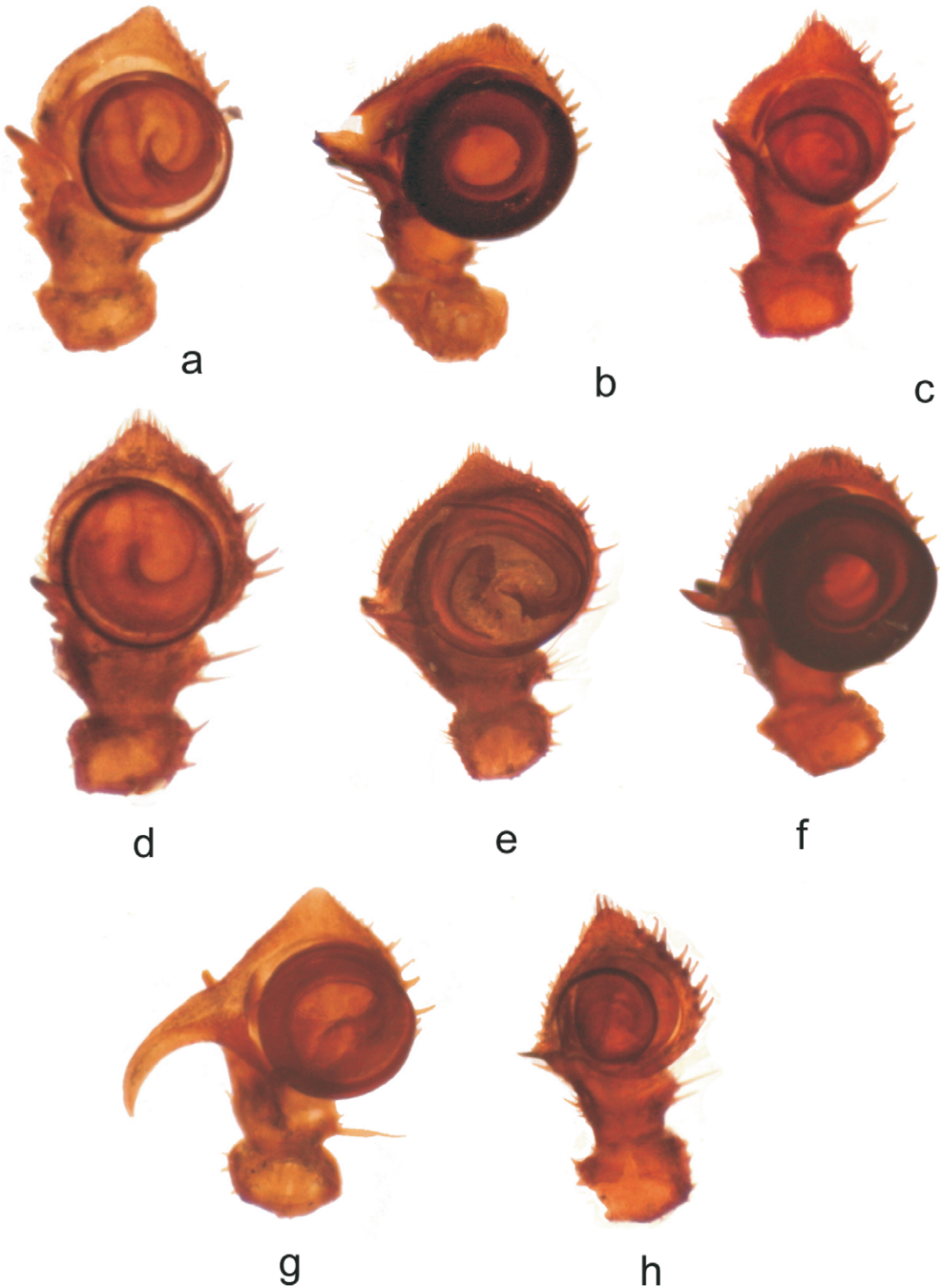


Fig. 5. Photographs of ventral view of male palps. **a**, *Simorcus capensis*; **b**, *S. cotti*; **c**, *S. cummingae* paratype NCA 2004/724; **d**, *S. haddadi*; **e**, *S. kalemie* sp. n.; **f**, *S. lotzi* holotype; **g**, *S. itombwe* holotype; **h**, *S. vanharteni*.

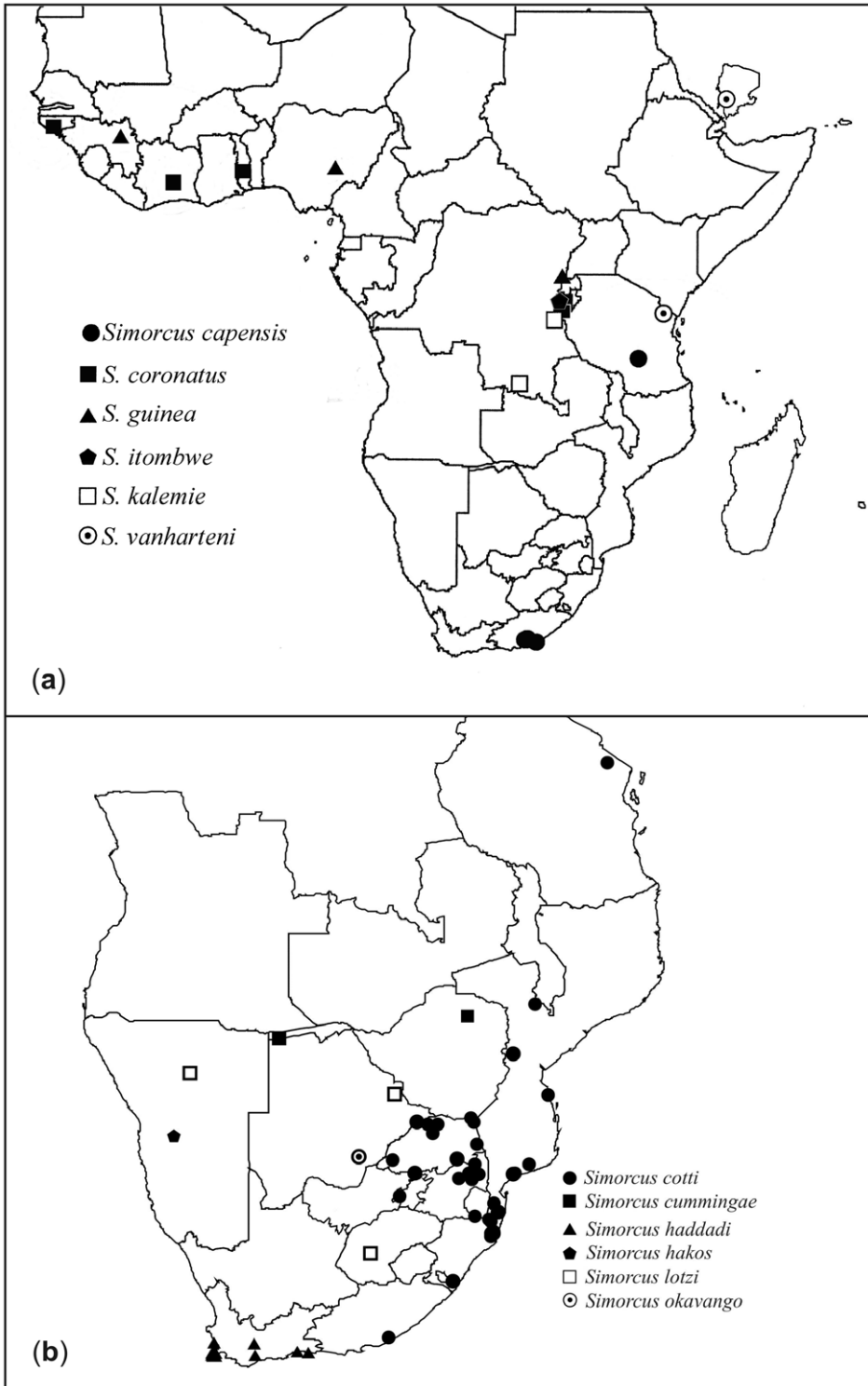


Fig. 6. Distribution maps of *Simorcus* species in the Afrotropical Region.

C. Haddad (NCA 2007/3147); 1 imm., Cape Vidal, 28°07'S 32°33'E, 1.iii.07, P. van Niekerk (NCA 2005/1407); 1 imm. ♂, Margate, 30°48'S 30°24'E, 17.x.1979, sweeping grass, C.J. Cilliers (NCA 88/610); 1 imm ♂, same locality, on ground, C. J. Cilliers (NCA 88/594); 1 imm. ♀, 1 imm. ♂, Vernon Crookes Nature Reserves, 30°16'S 30°37'E, 28.ix.1995, forest, L. Lotz (NMBA 07790). *Eastern Cape Province*: 1♀, 2 imm., Port Alfred, 33°32'S 27°2'E, J. Hewitt (AM 1915); 1 imm., Fort Brown, 33°07'S 26°37'E, Andries Vosloo Kudu Reserve, 11.iv.1981, on *Pappea capensis*, P.M.C. Croeser (NM). *Gauteng Province*: 1 imm., Roodekrans, Roodepoort, 26°19'S 27°57'E, 9.xi.1980, A. le Roy (NCA 88/601). *Mpumulanga Province*: 1♀, White river, Onder Sabie, 25°07'S 31°55'E, 10.i.1990, E. Visagie (NMBA 3374); 1♀, Kaapmuiden, 25°32'S 31°20'E, xi.1905, W. Tucker (SAM B4266); 1 imm., Nelspruit, 25°29'S 30°57'E, 14.iii.1971, on citrus, A. Swart (NCA 76/1233); 3♂, 2♀, several imm., Burgershall, 25°06'S 31°04'E, 21.i.1989, citrus orchard, beating, M. vd Berg (NCA 2008/3553); 1 imm ♀, Kruger National Park, 24°98'S 31°58'E, 4.iv.2006 (NCA 2009/4580). *Limpopo Province*: 1♀, Olifantsriver, 25°3'S 28°36'E, i.1985, A. Capener (NM 9462); 1 imm., Blydepoort Nature Reserve, 24°34'S 30°48'E, 23.ii.1978, shrub, M.K.P. Meyer (NCA 88/604); 1 imm., Kruger National Park (no exact locality), E. Visagie (NMBA 5994); 1 imm ♀, Kruger National Park (Skukuza), 24°57'S 31°35'E, 4.iv.2006, K. Harris NCA 2005/1406; 1 imm., same locality, Kruger National Park (Pafuri), 22°26'S 31°18'E, 15.x.1995, trunk of tree, A. Leroy (NCA 2005/1405); 1 imm., Pafuri (Waller's Camp), 22°46'S 31°30'E, 16.ii.2008, mixed woodland, branch beating, V. Gelebe (NCA 2008/1410); 1 imm., Kruger National Park (15 km NW of Letaba Camp), 23°59'S 31°47'E, 27.x.2005, I. Engelbrecht & M. Paulsen (NCA 2007/2308); 1 imm., Lajuma, 23°01'S 29°27'E, Soutpansberg, 15.v.2004, tall forest, beating *Croton sylvaticus*, M. Mafadza (NCA 2005/2420); 1♀, 1 imm., same locality, 17.v.2004, tall forest, beating *Gymnosporia* sp., M. Mafadza (NCA 2005/2421); 1 imm., Acacia Game Lodge Reserve, 20 km NE of Thabazimbi, 24°36'S 27°22'E, 14.ix.2005, D. Penny & A. S. Dippenaar-Schoeman (NCA 2008/3552); 1♀, Blouberg Nature Reserve, 22°59'S 29°02'E, 22.iii.2006, beating *Philenoptera violaceae*, S. Foord (NCA 2005/1409); 2♂, same locality, 28.xi.2005, beating *Philenoptera violaceae*, F. Maanda (NCA 2005/1411); 2♂, 1 imm., same data, F. Maanda (NCA 2005/1413); 1♂, same locality,

30.xi.2005, beating *Spirostachus africanus*, Ed Stam (NCA 2005/1415); 1♂, same locality, 30.xi.2005, beating *Sclerocarya birrea*, Freedom Mbedzi (NCA 2005/1418); 1♀, Little Leigh, Western Soutpansberg, 22°57'S 29°52'E, 22.iii.2006, beating *Pterocarpus rotundifolius*, Norbert Hahn (NCA 2005/1416); 1♂, same locality, 23.xi.2005, beating *Burkea africana*, Stefan Foord (NCA 2005/1417); 1♂, 25.xi.2005, same locality, branch beating *Pterocarpus rotundifolius*, Stefan Foord (NCA 2005/1419); 1♂, Little Leigh, 22°93'S 29°88'E, 25.xi.2005, beating *Podocarpus rotundifolius*, Stefan Foord (NCA 2009/4579); 1♀, Mogalakwena Nature Reserve, Nooitgedacht Farm, 22°45'S 28°42'E, 22.i.2008, branch beating, closed woodland, Mike Muthapali (NCA 2005/1420).

Distribution. Mozambique, South Africa. *New records*: Swaziland, Tanzania (Fig. 6a).

Natural history. *Simorcus cotti* was collected by beating and sweeping of grass, trees, shrubs and herbs in the Forest and Savanna Biomes. They were collected from the following plants: *Acacia tortilis*, *A. nigrescens*, *A. grandicornuta*, *A. nilotica*, *A. xanthophloea*; *Aloe marlothii*; *Burkea africana*; *Croton sylvaticus*; *Helichrysum* spp.; *Panicum* spp., fever trees; *Pappea capensis*; *Philenoptera violaceae*; *Pterocarpus rotundifolius*; *Sclerocarya birrea*; *Gymnosporia* spp.; *Spirostachus africana*; *Terminalia sericea* woodland. Adult males were sampled from November to March and the females from December to March.

***Simorcus cummingae* sp. n.**, Figs 2k–m, 3e, 5c, 6a

Diagnosis

This species is recognized by large abdominal tubercles each bearing very small spiniform setae; clypeal edge with 8 (7–9) spiniform setae; with white mark present between eye tubercles and clypeal edge or with white lines running from corner of clypeus towards posterior tubercle, and horizontally between them; eye tubercles each bearing a stout spiniform seta, setae on anterior tubercles much longer than rest. Epigyne distinct oval plate, longer than wide with small indistinct anterior atrium (Fig. 2k–m). Male palp with RTA long and tapered to sharp sclerotized tip; tutaculum short and triangular (Fig. 3e). Closely resembles *S. vanharteni* sp. n., but differs in the structure of the epigyne in that the spermathecae are two-lobed and male palp, in having a tutaculum.

Description

Female. Size ($n = 5$): TL 5.7 (4.5–7.0); CW 2.16; CL 2.5; AME 0.05; ALE 0.13; PME 0.08; PLE 0.14; AME–AME 0.14; AME–ALE 0.14; PME–PME 0.25; PME–PLE 0.25; MOQ: AME–PME 0.37; AME–AME 0.25; PME–PME 0.40.

Colour. Carapace brown, mottled with cream; chelicerae: brown with broad white mark across centre; sternum with white markings. Abdomen mottled white and brown, centrally with irregular black mark. Legs mottled cream and brown, variable quantities of white markings occur on all segments of legs; palps with large white mark on proximal end of metatarsus.

Carapace. Several small tubercles behind PER, thoracic area posteriorly with six tubercles, in a recurved row. *Sternum.* Covered with fine hairs. *Mouthparts.* Chelicerae dorsally each with eight short setae. *Eyes.* MOQ as wide as long. *Abdomen.* Dorsum covered with short clavate hairs. *Legs.* II > I; leg lengths (average, $n = 5$): leg I 8.13, leg II 8.67, leg III 4.41, leg IV 5.58; all segments with fine hair with numerous scattered strong setae, some hairs arranged in longitudinal rows; coxae covered with fine hairs. *Epigyne.* Distinct oval plate, longer than wide with small anterior atrium; copulatory ducts visible as two oblong structures, anteriorly narrowed tips slightly sclerotized (some variation present) (Fig. 2k, m); copulatory ducts oblong, spermathecae two-lobed (Fig. 2l).

Male. Size ($n = 2$): TL 4.0 (4.0 – 4.0); CW 1.67; CL 1.9; AME 0.05; ALE 0.11; PME 0.06; PLE 0.15; AME–AME 0.1; AME–ALE 0.12; PME–PME 0.19; PME–PLE 0.20; MOQ: AME–PME 0.31; AME–AME 0.20; PME–PME 0.31.

Abdomen. Slightly narrower than in female, tubercles more prominent. *Legs.* II > I; leg lengths (average, $n = 2$): leg I 6.90, leg II 7.18, leg III 3.20, leg IV 3.90. *Palp.* RTA long and tapered to a sharp sclerotized tip; tutaculum short, triangular, laterally projecting (Figs 3e, 5c).

Etymology. Named in honour of Meg Cumming, the collector of the type series, and in recognition of her contribution to research on spiders in Zimbabwe.

Types. Holotype ♀, ZIMBABWE: Harare, 19 Walmer Drive, 17°15'S 31°02'E, 15.xii.1999, from plants, M. Cumming (NCA 2004/724a). Paratypes: 2♂ same data (NCA 2004/724b); 1♀, Harare, 17°15'S 31°02'E, on jacaranda tree, 7.ii.2004, M. Cumming (NCA 2004/723); 1♀, same locality, 15.xi.2002, on plants, M. Cumming (NCA 2004/725); 1 imm. ♀,

same locality, 17.ix.2004, bark of dead tree feeding on *Camponotus* ant, M. Cumming (NCA 2005/1428); 1♀, same locality, ii–iii.2002, M. Cumming (NCA 2005/1432). BOTSWANA: 1♀, Lesiding Research Camp, near Shakawe, Okavango Delta, 18°25', 21°53', 26–29.xi.2006, night collecting, C. Haddad (NCA 2007/967).

Other material examined. ZIMBABWE: 2 imm. ♂, Harare, 19 Walmer Drive, 17°15'S 31°02'E, xi.2005, M. Cumming (NCA 2005/1429); 2 imm., same locality, v.2004, under loose bark of *Acacia sieberona* and *Prunus ceresoides*, M. Cumming (NCA 2005/1430); 1 imm., same locality, iv. 2005, in garden, M. Cumming (NCA 2005/1431)

Distribution. Botswana, Zimbabwe (Fig. 6a).

Natural history. Specimens of *S. cummingae* were collected from plants, mainly on dead and loose bark of trees such as *Acacia sieberona* and *Prunus ceresoides*. One specimen was feeding on a *Camponotus* ant. Adult females were collected from November to March and adult males in December.

Simorcus guinea* sp. n., Figs 2c–d, 6b*Diagnosis**

This species is recognized by large abdominal tubercles, each bearing very small spiniform setae; clypeal edge with 4–6 short, spiniform setae; clypeus without distinctive white mark but with a paler area with convex lateral sides present between eyes and clypeal edge; eyes tubercles bearing stout spiniform setae, anterior setae longer than rest. Epigyne distinct oval plate, longer than wide; deep anterior atrium (Fig. 2c). Closely resembles *S. hakos* sp. n. but copulatory openings differ. Male unknown.

Description

Female. Size ($n = 2$): TL 8.5 (7.8–9.2); CW 2.6; CL 3.45; AME 0.08; ALE 0.17; PME 0.09; PLE 0.17; AME–AME 0.2; AME–ALE 0.17; PME–PME 0.29; PME–PLE 0.36; MOQ: AME–PME 0.43; AME–AME 0.24; PME–PME 0.36.

Colour. Carapace brown, mottled with cream; cephalic area brown. Chelicerae dark brown, central third white. Abdomen mottled black, white and dark brown. Legs mottled cream and brown, broad cream band dorsally across femora III and IV, variable quantities of white markings occur on all segments of legs and sternum. Palps brown.

Carapace. Five small tubercles behind PER; thoracic area with six tubercles posteriorly in

recurved row. *Mouthparts*. Chelicerae dorsally with 6–7 short, erect setae. *Eyes*. PEs and ALEs situated on elevated ridge, ridge decorated with six horn-like tubercles, each bearing a seta at their tips, AMEs in front of ridge; MOQ wider than long. *Abdomen*. Dorsum covered with short, clavate hairs. *Legs*. I > II; leg lengths ($n = 1$): leg I 16.05, leg II 14.40, leg III 8.05, leg IV 11.30; all segments except tarsi II–IV covered with setae and hairs, some hairs arranged in longitudinal rows, tarsi II–IV with hair only. *Epigyne*. Distinct oval plate, longer than wide; deep anterior atrium with lateral edges sclerotized (Fig. 2c); copulatory ducts visible as two oblong structures; copulatory openings very narrow; copulatory ducts ovate-oblong; spermathecae round with fertilization duct sinusous medially, close together (Fig. 2d).

Male. Unknown.

Etymology. The specific name is a noun in apposition taken from the type locality.

Types. Holotype ♀, GUINEA: F C de Zamia, 08°24'N 24°09'W, 7.iv.2002, J. F. van der Donckt (MRAC 220829). Paratype: DEMOCRATIC REPUBLIC OF CONGO: Kivu Province: 1♀, 1 imm. ♀, Kirwa, 1°11'S 29°27'E, 1932, Ortman (MRAC 11416/11417).

Distribution. Democratic Republic of Congo and Guinea (Fig. 6b).

Natural history. Female collected in April.

***Simorcus hakos* sp. n.**, Figs 2e–f, 6a

Diagnosis

This species is recognized by large abdominal tubercles each bearing very small spiniform setae; clypeal edge with four spiniform setae; clypeus without distinctive white mark, only white lines that run from corner of clypeus towards posterior horns, and horizontally between them; eye tubercles bearing stout, spiniform setae, anterior setae longer than rest. *Epigyne* distinct oval plate, longer than wide with anterior atrium (Fig. 2e,f). Closely resembles *S. guinea* but copulatory openings more funnel-like and copulatory ducts sac-like with small spermathecae. Male unknown.

Description

Female. Size ($n = 1$). TL 6.9; CW 1.9; CL 2.4; AME 0.05; ALE 0.1; PME 0.08; PLE 0.13; AME–AME 0.13; AME–ALE 0.18; PME–PME 0.25; PME–PLE 0.25; MOQ: AME–PME 0.25; AME–AME 0.15; PME–PME 0.29.

Colour. Carapace yellow-brown, mottled with

cream; cephalic area brown; chelicera: dark brown, centrally with broad white mark. *Abdomen*. dorsum mottled white and grey, posterior part of abdomen with irregular black marks; venter centrally yellow-brown, bordered with white, laterally grey. Legs mottled white and yellow-brown, variable quantities of white markings occur on all segments of legs and pedipalps, the same on sternum and maxillae.

Carapace. Many small tubercles behind PER; thoracic area posteriorly with six tubercles, in a recurved row. *Mouthparts*. Chelicerae dorsally with 8–9 short setae. *Eyes*. MOQ wider than long. *Abdomen*. Dorsum covered with short clavate hairs. *Legs*. I > II; leg lengths (average, $n = 1$): leg I 9.40, leg II 9.30, leg III 4.85, leg IV 5.65; femora, patellae, tibiae and metatarsi with tubercles with short setae along posterior edge, or along both edges of femora; all segments except tarsi II–IV covered with setae and hairs, some hairs arranged in longitudinal rows, tarsi II–IV with hair only. *Epigyne*. Distinct oval plate, longer than wide; anterior atrium with two thin sclerotized bars centrally; copulatory ducts visible as two oblong structures (Fig. 2e); copulatory openings funnel-like; copulatory ducts sac-like, broadly C-shaped; spermathecae much smaller, irregularly in shape (Fig. 2f).

Male. Unknown.

Etymology. The specific name is a noun in apposition taken from the type locality.

Type. Holotype ♀, NAMIBIA: Hakos Mountains, Portsmut farm, 23°11'S 16°24'E, 7.xi.1969, B. Lamoral (NM).

Distribution. Namibia (Fig. 6a).

Natural history. Female collected in February.

***Simorcus itombwe* sp. n.**, Figs 3d, 5g, 6b

Diagnosis

Species recognized by abdominal tubercles bearing very small spiniform setae; clypeal edge with four very long, spiniform setae; clypeal mark absent; eye tubercles with stout, spiniform seta of unequal length, setae on anterior tubercles much longer than rest. Male palp with both RTA and cymbial apophysis very long (Figs 3d, 5g). Male palp resembles that of *S. coronatus* (Fig. 3b–c) closely in both having a long curved cymbial apophysis, but *S. itombwe* has a much longer cymbial apophysis and RTA, with RTA projecting far beyond cymbial apophysis. Female unknown.

Description

Male. Size ($n = 1$): TL 4.6; CW 1.6; CL2.2; AME 0.05; ALE 0.18; PME 0.10; PLE 0.15; AME–AME 0.05; AME–ALE 0.08; PME–PME 0.13; PME–PLE 0.15; MOQ: AME–PME 0.18; AME–AME 0.08; PME–PME 0.18.

Colour. Carapace and legs reddish brown, mottled with cream and brown. Abdomen dorsally greyish brown; ventrolaterally with cream striae; central area grey. Legs yellow-brown.

Carapace. Two small tubercles behind PER; thoracic area centrally with four tubercles, and posteriorly with two large lateral tubercles. *Mouthparts.* Chelicerae dorsally with five short setae. *Eyes.* MOQ as wide as long. *Abdomen.* Caudal tubercles >20; each sparsely covered with very small clavate setae. *Legs.* I > II; leg lengths ($n = 1$): leg I 7.75, leg II 6.60, leg III 3.75, leg IV 5.30; all leg segments except tarsi bearing setae. *Palp.* RTA very long, four-fifths length of tarsus, with subapical tooth; cymbial apophysis very long, strongly curving retrolaterally (Figs 3d, 5g).

Female. Unknown.

Etymology. The specific name is a noun in apposition taken from the type locality.

Type. Holotype ♂, Democratic Republic of Congo: Kivu Province, Itombwe, 3°30'S 29°00'E, terr. de Mwenga, tete de source de la Bukundji, 2250 m a.s.l., ii. 1957, N. Leleup (MRAC 91749/91750).

Distribution. Known only from the type locality (Fig. 6b).

Natural history. Male collected during February.

***Simorcus kalemie* sp. n.**, Figs 3g, 5e, 6b**Diagnosis**

This species is recognized by the large abdominal tubercles each bearing very small spiniform setae; clypeal edge with 7–9 short, stout, spiniform setae; clypeus with distinctive broad trapezoid white mark with convex lateral sides; eye tubercles bearing stout, spiniform setae, posterolateral setae much longer than rest. Male palp with RTA of medium length; tutaculum of medium length with rounded tip, laterally projecting (Figs 3g, 5e). Female unknown.

Description

Male. Size ($n = 1$): TL 6.2; CW 2.1; CL 2.8; AME 0.08; ALE 0.15; PME 0.10; PLE 0.15; AME–AME 0.13; AME–ALE 0.15; PME–PME 0.2; PME–PLE 0.2; MOQ: AME–PME 0.39;

AME–AME 0.24; PME–PME 0.35.

Colour. Carapace dark brown, mottled with light brown; sternum mottled with cream; labium brown; chelicerae dark brown, central third white. Abdomen mottled cream, light and dark brown; venter laterally with some cream spots. Legs mottled cream and brown, proximal two-thirds of tibia IV cream, coxae brown; variable quantities of white markings occur on all segments of legs, except in metatarsi and tarsi I and II. Palps brown with cream mark on distal edge of femur and patella.

Carapace. Thoracic area posteriorly with six tubercles, in a recurved row. *Mouthparts.* Chelicerae dorsally with 8–9 short setae. *Clypeus.* Edge with a row of seven short stout setae and two thinner setae. *Eyes.* PEs and ALEs situated on elevated ridge, which is decorated with six horn-like tubercles; MOQ longer than wide. *Abdomen.* Dorsum covered with short clavate hairs. *Legs.* Femora, patellae, tibiae and metatarsi with tubercles with short setae along posterior edge, or along both edges in femora; I > II; leg lengths ($n = 1$): leg I 12.52, leg II 11.20, leg III 6.52, leg IV 8.60, all segments except tarsi II–IV covered with setae and hairs, some hairs arranged in longitudinal rows, tarsi II–IV with hair only. *Male palp.* RTA of medium length, extending anterolaterally to just past tutaculum; tutaculum triangular, laterally projecting (Figs 3g, 5e).

Remark. Four immature females were collected near the type locality. They closely resemble the male in colouring and in the shape of the clypeal mark. One of them has cream-coloured bands on the lateral sides of the carapace. Because they were immature they are not included in type series.

Etymology. The specific name is a noun in apposition taken from the type locality.

Type. Holotype ♂, DEMOCRATIC REPUBLIC OF CONGO: Katanga Province: Bendera, 5°3'S 28°54'E, near Kalemie (formerly Albertville), Kasanga, ix.1958, alt. 950 m a.s.l., V. Leleup (MRAC 112744).

Additional material examined. DEMOCRATIC REPUBLIC OF CONGO: Katanga Province: 4 imm. ♀, Likasi (Jadotville) Kasompi, 10°59'S 25°53'E, x.1956, Z. Bacq & V. Leleup (MRAC 90269, 09075, 90976, 90969).

Distribution. Democratic Republic of Congo (Fig. 6b).

Natural history. Male was collected in September, juveniles in October.

***Simorcus lotzi* sp. n.**, Figs 3h, 5f, 6a**Diagnosis**

This species is recognized by large abdominal tubercles each bearing very small spiniform setae; clypeal edge with eight spiniform setae; clypeus without distinctive white mark, only white lines that run from corner of clypeus towards posterior horns, and horizontally between them; eye tubercles bearing stout, spiniform setae, posterolateral setae much longer than rest. Male palp with RTA broad but sharply pointed; tip approximately same length and shape as that of cymbial apophysis; embolus broad and darkly sclerotized embolus resembles that of *S. cotti* (Figs 3h, 5f). Female unknown.

Description

Male. Size ($n = 2$): TL 5.2 (4.9–5.5); CW 1.7; CL 2.15; AME 0.05; ALE 0.14; PME 0.08; PLE 0.15; AME–AME 0.11; AME–ALE 0.14; PME–PME 0.23; PME–PLE 0.23; MOQ: AME–PME 0.21; AME–AME 0.16; PME–PME 0.27.

Colour. Carapace brown, mottled with white; chelicerae dark brown, central third white. Abdomen mottled white, grey and brown; posterior part of abdomen with irregular black marks. Legs mottled white and yellow-brown, coxa distally with two dark brown spots, variable quantities of white markings occur on all segments of legs and palps, the same on sternum, maxillae. Palps: yellow brown, except white tarsus.

Carapace. Two small tubercles behind PER; thoracic area posteriorly with six tubercles, in recurved row. *Mouthparts*. Chelicerae dorsally with five short setae. *Abdomen*. Dorsum covered with small clavate hairs. *Eyes*. PEs and ALEs situated on elevated ridge, ridge decorated with six horn-like tubercles, AMEs in front of ridge; MOQ wider than long. *Legs*. $1 > II$; leg lengths (average, $n = 2$): leg I 8.05, leg II 7.10, leg I 3.90, leg IV 5.22; all segments except tarsi II–IV covered with setae and hairs, some hairs arranged in longitudinal rows, tarsi II–IV with hair only. *Male palp*. RTA medium length, extending anteriorly, tip broad but sharply pointed and approximately same length and shape of cymbial apophysis; cymbial apophysis of median length, curving strongly prolaterally with tip acute; embolus broad and darkly sclerotized (Figs 3h, 5f).

Etymology. Named after Leon Lotz, in recognition of his contribution to spider research in Africa.

Types. Holotype δ , SOUTH AFRICA: Free State Province: Bloemfontein, Botanical Gardens, 29°08'S 26°10'E, xii.2006–i.2007, from pitfall traps, L. Lotz (NMBA 10976a). Paratypes; δ same data (NMBA 10976b). Limpopo Province: 1 δ , Naboomspruit, 24°52'S 28°70'E, 15.iii.2007, on plants, D. Marais (NCA 2009/4578). *Paratypes*. NAMIBIA: 1 δ , Grootfontein District, Farm Otjikoto 573, 20°00'S 17°06'E, 1523 m a.s.l., 7.ii.2008, beating vegetation, near pan, Otjikoto Survey-Eduventures (SMN). BOTSWANA: 1 δ , Selkirk Mine, nr Francistown, 21°06'S 27°32'E, 7.xi.2007–29.ii.2008, pitfall traps, D.H. Jacobs (NCA 2009/867).

Distribution. Botswana, Namibia and South Africa (Fig. 6a).

Natural history. Collected by beating and pitfall traps. Males collected in December to February.

***Simorcus okavango* sp. n.**, Figs 2g–h, 6a**Diagnosis**

This species is recognized by large abdominal tubercles each bearing very small spiniform setae; clypeal edge with eight spiniform setae; distinctive broad white mark between eye area and clypeal edge, trapezoid with convex lateral sides; eyes tubercles bearing stout spiniform setae, anterior setae much longer than rest. Epigyne two indistinct half-circles; copulatory ducts visible as two large oval reddish brown structures (Fig. 2g). Male unknown.

Description

Female. Size ($n = 1$): TL 11.0; CL 2.0; AME 0.08; ALE 0.2; PME 0.1; PLE 0.15; AME–AME 0.20; AME–ALE 0.15; PME–PME 0.23; PME–PLE 0.20; MOQ: AME–PME 0.28; AME–AME 0.24; PME–PME 0.30.

Colour. Carapace yellow-brown, mottled with white or cream; cephalic area brown; chelicerae proximal halves white and distal half dark brown. Abdomen mottled cream and brown. Legs mottled cream and yellow-brown, variable quantities of cream markings occur on all segments of legs and pedipalps and sternum. Palps yellow-brown, except white tarsus.

Carapace. Many small tubercles behind PER; thoracic area posteriorly with six tubercles, in recurved row. *Sternum*. Entire edge with long setae. *Mouthparts*. Chelicerae dorsally with 7–8 short, dark setae. *Abdomen*. Dorsum covered with short clavate hairs. *Eyes*. PEs and ALEs situated on

elevated ridge, ridge decorated with 6 horn-like tubercles; MOQ wider than long. *Legs.* I>II; leg lengths ($n = 1$): leg I 14.10, leg II 13.15, leg III 7.50, leg IV 10.50, all segments except tarsi II–IV covered with setae and hairs, some hairs arranged in longitudinal rows, tarsi II–IV with hair only. *Epigyne.* Two indistinct half-circles anteriorly; copulatory ducts visible as two oval reddish brown structures (Fig. 2g); copulatory openings narrow; copulatory duct ovate-oblong; spermathecae round (Fig. 2h).

Etymology. The specific name is a noun in apposition taken from the type locality.

Type. Holotype ♀, BOTSWANA: Okavango Delta, about 30 km N of Lechwe Camp, 24°23'S 25°51'E, 17–20.xi.1979, B.H. Lamoral (NM).

Distribution. Botswana (Fig. 6a).

Natural history. Female was collected in November.

***Simorcus vanharteni* sp. n.**, Figs 2n–o, 3f, 5h, 6b

Diagnosis

This species is recognized by large abdominal tubercles each bearing very small spiniform setae; clypeal edge with 8 (7–9) spiniform setae; with white mark between eye tubercles and clypeal edge, or with white lines running from corner of clypeus towards posterior tubercle, and horizontally between them; eye tubercles bearing stout spiniform setae, setae on anterior tubercles much longer than rest. *Epigyne* a distinct oval plate with small mushroom-shaped atrium anteriorly (Fig. 2n). Male palp with RTA long and tapered to sharp sclerotized tip; cymbial apophyses triangular (Figs 3f, 5h). Closely resembles *S. cummingae*, but differs in the structure of the genitalia

Description

Female. Size ($n = 3$): TL 5.8 (5.5–6.4); CW 1.9; CL 2.5; AME 0.04; ALE 0.12; PME 0.06; PLE 0.12; AME–AME 0.15; AME–ALE 0.2; PME–PME 0.27; PME–PLE 0.25; MOQ: AME–PME 0.37; AME–AME 0.21; PME–PME 0.37.

Colour. Carapace brown, mottled with cream; sternum with white markings; chelicerae brown with broad white mark centrally. Abdomen mottled white and brown, centrally with irregular black mark. Legs mottled cream and brown; variable quantities of white markings occur on all segments of legs and palps; large white mark on proximal end of metatarsus.

Carapace. Several small tubercles behind PER;

thoracic area posteriorly with six tubercles, in recurved row. Sternum covered with fine hairs. *Mouthparts.* Chelicerae dorsally with six short setae. *Eyes.* MOQ wider than long. *Abdomen.* Dorsum covered with very short clavate hairs. *Legs.* II>I; leg lengths (average, $n = 3$): leg I 8.45, leg II 8.44, leg III 4.44, leg IV 5.36; all segments with numerous strong setae scattered between hairs, except tarsi II–IV; coxae covered with fine hairs. *Epigyne.* A distinct oval plate, longer than wide with small mushroom-shaped anterior atrium; copulatory ducts visible as two oblong structures within margins of plate; anteriorly with narrowed tips slightly sclerotized on inner edges (Fig. 2n); copulatory ducts ovate-oblong; spermathecae sinuous (Fig. 2o).

Male. Size ($n = 4$): TL 3.98 (3.7–4.4); CW 1.45; CL 1.8; AME 0.05; ALE 0.13; PME 0.08; PLE 0.13; AME–AME 0.12; AME–ALE 0.14; PME–PME 0.2; PME–PLE 0.18; MOQ: AME–PME 0.28; AME–AME 0.18; PME–PME 0.30.

Abdomen. Slightly narrower than in female, tubercles slightly more prominent. *Legs.* I or II longest; leg lengths (average, $n = 4$): leg I 7.18, leg II 6.60, leg III 3.19, leg IV 4.19. *Palp.* RTA long and tapered to a sharp sclerotized tip; cymbial apophysis short, triangular and horizontally projecting (Figs 3f, 5h).

Etymology. Named after Anthony van Harten, collector of the type specimens, and in recognition of his contribution to spider research in the Afrotropical Region.

Types. Holotype ♂, TANZANIA: 3♂, Mkomazi Game Reserve, 4°37'S 38°4'E, 11–28.xi.1994, A. Russell-Smith (MRAC 215539). Paratypes: 2♀, 2 imm ♀, Mkomazi Game Reserve, 4°37'S 38°4'E, 11–28.xi.1994, A. Russell-Smith (MRAC 215539); YEMEN: 1♀, near Hammam 'Ali, 14°50'N 43°46'E, 9.vii.1989, T. van Harten (NCA 2005/1433); 1♂, same locality, 19.viii.1989, T. van Harten (NCA 2005/1434).

Distribution. Yemen, Tanzania (Fig. 6b).

Natural history. Females and males collected together in November.

ACKNOWLEDGEMENTS

We are grateful to the curators of the cited institutions for the loan of specimens; Ezemvelo KwaZulu-Natal Wildlife for allowing the first author to collect in the greater St Lucia Wetland Park, especially in restricted areas; X. Combrink,

the research project manager for KZN Wildlife at St Lucia, who assisted with the collection of spiders in this area; S. Foord of the University of Venda for preparing the maps; E. van Niekerk of the ARC-Plant Protection Research Institute for preparing the plates and A. van den Berg of the same institute for comments on the manuscript; the College of Agricultural and Environmental

Sciences, UNISA for a grant to undertake this study. This work forms part of the South African National Survey of Arachnida, a project of the Threatened Species Programme coordinated by the South African National Biodiversity Institute and the Agricultural Research Council. Financial assistance from the National Research Foundation (GUN 70797) is gratefully acknowledged.

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Accepted 21 January 2010