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Author: Haddad, Charles R.

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Vendaphaea, a new dark sac spider genus apparently endemic to the Soutpansberg Mountains, South Africa (Araneae: Corinnidae)

Charles R. Haddad

Department of Zoology & Entomology, University of the Free State, P.O. Box 339, Bloemfontein, 9300 South Africa; haddadcr@ufs.ac.za

ABSTRACT

A new monotypic genus of dark sac spiders is described from the western Soutpansberg Mountains in the Limpopo Province, South Africa. *Vendaphaea* gen. n., with the type species *V. lajuma* sp. n., can be recognised by a peculiar genitalic morphology, closely situated posterior median eyes, lateral eyes on slight tubercles and the densely setose and heavily spined anterior legs. The genus is provisionally placed in Corinnidae *incertae sedis* and may be most closely related to the South African genera *Pronophaea* Simon, 1897 and *Austrophaea* Lawrence, 1952, and tropical African genus *Mandaneta* Strand, 1932. *Vendaphaea lajuma* sp. n. occurs in leaf litter and amongst grasses in montane savannah habitats.

KEY WORDS: Araneae, Corinnidae, dark sac spiders, South Africa, Soutpansberg, new taxa, endemics.

INTRODUCTION

The systematics of the Afrotropical Corinnidae is still in the early stages of revision, in an attempt to determine the true diversity of the group. So far, the genera *Hortipes* Bosselaers & Ledoux, 1997, *Graptartia* Simon, 1896, *Corinnomma* Karsch, 1880, *Thysanina* Simon, 1910 and *Austrophaea* Lawrence, 1952 have received attention (Bosselaers & Jocqué 2000*a*; Haddad 2004, 2006*a*, 2007; Lyle & Haddad 2006). Lyle (2008) revised two further tracheline genera in the Afrotropical Region, namely *Cetonana* Strand, 1929 and *Trachelas* L. Koch, 1872, but these revisions have yet to be published. Bosselaers and Jocqué (2000*b*) redescribed several poorly known Afrotropical spider genera, and transferred them to the Corinnidae. In addition, five new genera of trachelines have also been recently described from the region (Haddad 2006*b*; Haddad & Lyle 2008; Lyle & Haddad in press).

The current paper focuses on a new genus of ground-dwelling corinnids from the Soutpansberg Mountains in South Africa, to which they appear to be endemic. *Vendaphaea* gen. n. is allied to the African genera *Austrophaea* Lawrence, 1952, *Mandaneta* Strand, 1932 and *Pronophaea* Simon, 1897, with which it shares the strongly spined anterior legs, simple female spermathecal structure, and the male palp that has a fine median apophysis, curved embolus with associated conductor, and cymbium with a dense cymbial scopula and modified clavate setae.

MATERIAL AND METHODS

Material used in this study was observed in 70 % ethanol using a stereo microscope for descriptions and measurements. Photographs were taken using a Nikon Coolpix 8400 mounted on a Nikon SMZ 800 stereo microscope. The extended focal range images were stacked using CombineZM software (http://www.hadleyweb.pwp.blueyonder.co.uk). The epigynes and male palps of representative specimens were dissected and cleaned in a Branson 3200 ultrasonic bath for 10 min in 70 % ethanol, after which they were drawn. All material has been deposited in the National Collection of Arachnida, ARC – Plant Protection Research Institute, Pretoria, South Africa (NCA) and Museu Paraense Emílio Goeldi, Belém, Brazil (MPEG).

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Material for scanning electron microscopy was prepared through a graded ethanol series up to 100 %, after which it was critical point dried, mounted on stubs and sputter coated with gold three times for two minutes. Digitised micrographs were taken using a JEOL WinSEM at 10 kV.

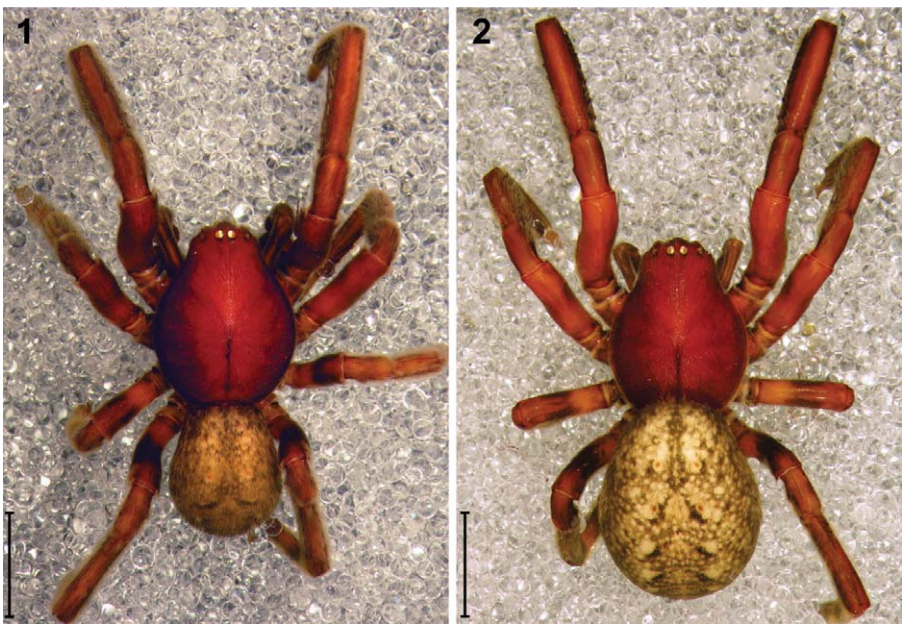
All measurements are given in millimetres (mm). A range of body measurements is given for the smallest and largest specimens of each sex, and eye and leg measurements are given for the largest specimen of each sex. Eye arrangements are described for the anterior view of the anterior eye row, and dorsal view of the posterior eye row. Leg spination follows the format of Bosselaers and Jocqué (2000*b*).

Abbreviations used in the descriptions are as follows: AER – anterior eye row, AL – abdomen length, ALE – anterior lateral eye, ALS – anterior lateral spinneret, AME – anterior median eye, AW – abdomen width, CL – carapace length, CW – carapace width, *do* – dorsal, FL – fovea length, MOQAW – median ocular quadrangle anterior width, MOQL – median ocular quadrangle length, MOQPW – median ocular quadrangle posterior width, PER – posterior eye row, PERW – posterior eye row width, *pl* – prolateral, PLE – posterior lateral eye, PLS – posterior lateral spinneret, *plv* – prolateral ventral, PME – posterior median eye, PMS – posterior median spinneret, *rl* – retrolateral, *rlv* – retrolateral ventral, SL – sternum length, ST – spermatheca, SW – sternum width, TA – tibial apophysis, TL – total length, *vt* – ventral terminal.

TAXONOMY

Genus **Vendaphaea** gen. n.

Etymology: The genus is named for the Venda people of northern South Africa, and the suffix reflects the affinities of the genus to *Pronophaea* and *Austrophaea*. Gender feminine.



Figs 1, 2. Dorsal habitus of *Vendaphaea lajuma* sp. n., male (1) and female (2). Scale bars = 2 mm.

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Type species: *Vendaphaea lajuma* sp. n.

Diagnosis: This genus can be recognised from other corinnids by the closely spaced posterior median eyes, densely setose and strongly spined anterior legs, and the uniquely shaped female epigyne and palpal morphology. *Vendaphaea* gen. n. differs from *Austrophaea*, *Mandaneta* and *Pronophaea* by the PME separated by 2/3 their diameter (at least one diameter in other genera), the medially placed spike-like median apophysis of the male palp (fine, retrolateral and curved in other genera), anticlockwise curved embolus (curved clockwise along distal tegular margin in other genera), the dorsal-retrolateral TA of the male palp (retrolateral in other genera), the laterally placed copulatory openings (along epigastric groove in other genera), and the ST projecting transversely into the body of the female.

Description: Medium sized spiders, 6.03–7.85 mm in length; carapace red-brown, abdomen mottled grey-brown with short black dorsal chevron markings, each ending in white spot (Figs 1, 2); carapace surface finely granulate (Fig. 3). Carapace oval, eye region narrow, fovea distinct (Figs 1, 2); posterior margin slightly concave. AER procurved, clypeus height slightly larger than AME diameter (Fig. 3); AME slightly smaller than ALE; AME closer to ALE than to each other (Figs 3, 4); PER slightly procurved; PME slightly larger than PLE; PME much closer to each other than to PLE; MOQ slightly wider anteriorly than posteriorly (Fig. 3). Chilum split, triangular, tapering distally, with distal notch (Fig. 4); cheliceral promargin with three teeth, retromargin with two teeth; shaggy seta distinct (Figs 5, 6); labium trapezoidal, wider than long; endites straight laterally with indistinct serrula comprising short blunt denticles, with dense maxillar hair tuft on mesal margins (Figs 7, 8). Pleural bars isolated; sternum broad, shield-shaped, slightly narrowed anteriorly; precoxal triangles and intercoxal sclerites absent; retrocoxal window present on coxa I. Legs I and II more strongly built than legs III and IV, distal segments densely setose (Figs 1, 2, 9, 11); leg formula 1423; legs heavily spined, particularly ventral surfaces of anterior tibiae and metatarsi (Figs 9–14); femora I with paired *plv* and *rlv* spines; tarsi short, less than one third metatarsus length, with many erect dorsal and lateral trichobothriae; tarsal claws short, situated laterally within very dense claw tufts; metatarsi III and IV without terminal preening brush or comb. Abdomen overlapping posterior margin of carapace; oval, tapering posteriorly, without dorsal or ventral scuta; paired dorsal sigilla present (Figs 1, 2); venter with paired tiny sclerites running in two rows from epigastric fold to spinnerets, lateral rows weakly sclerotised; inframamillary sclerite absent. ALS of females (Fig. 15) with many piriform gland spigots (major ampullate gland spigot on mesal margin not distinguished in female because of the angle of the SEM photos that excludes the mesal region of the spinnerets where the major ampullate gland spigots occur – see Platnick & Ewing 1995; Ramírez *et al.* 2001; Bosselaers & Jocqué 2002); PMS of female with one small minor ampullate gland spigot, two aciniform gland spigots, and five large cylindrical gland spigots (Fig. 16); PLS of female with five large cylindrical gland spigots and three small aciniform gland spigots (Fig. 17). Male palpal tibia with single curved dorsal-retrolateral TA with tridentate tip, and dorsal distal lobe (Fig. 18); cymbium oval, with proximal dorsal ridge, modified clavate setae prolaterally and distally, and dense setal mat (cymbial scopula) dorsally (Figs 18, 19, 25); tegulum with spike-like median apophysis; embolus curved and directed distally,

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partly surrounded by membranous conductor (Figs 20, 23); female epigyne strongly sclerotised, with median septum and lateral copulatory ducts (Figs 21, 26); copulatory openings frequently plugged (Fig. 21); ST simple, curved, projecting into body in transverse plane (Fig. 27).

Vendaphaea lajuma sp. n.

Figs 1–27

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

Description:

Male.

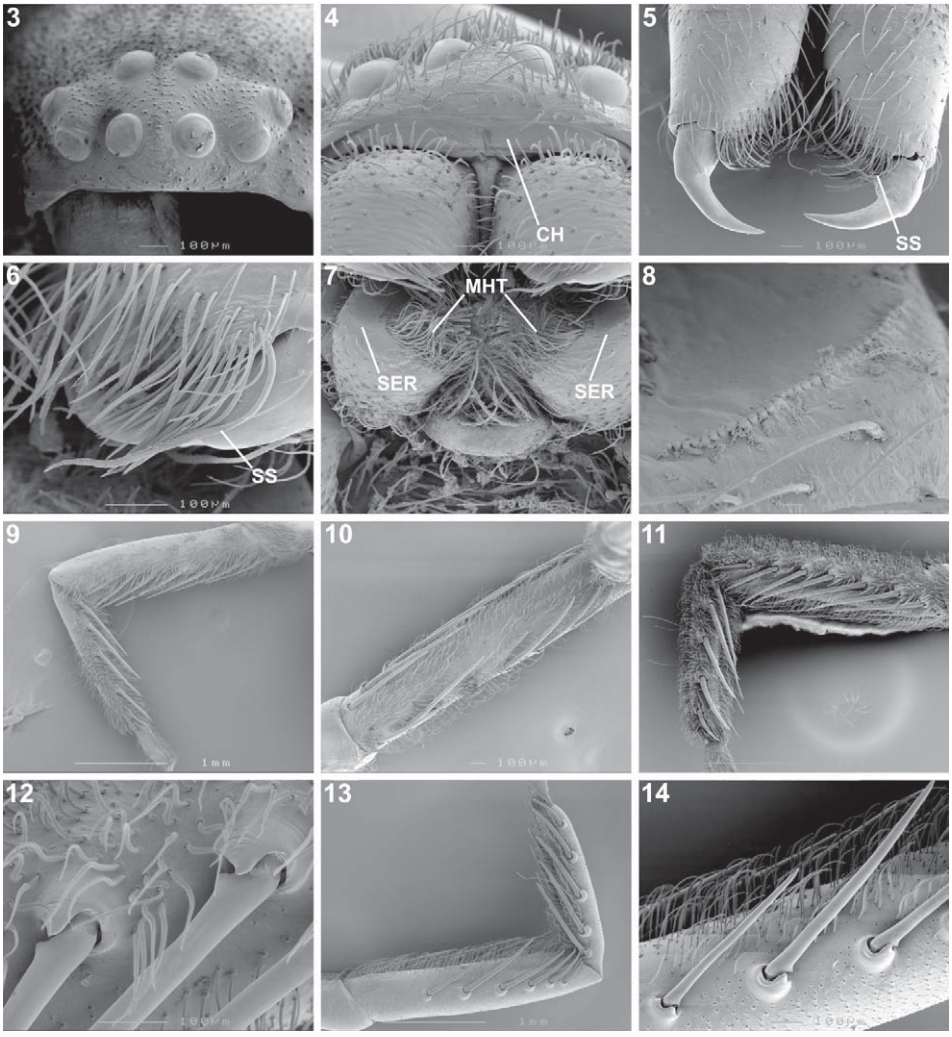
Measurements: CL 3.40–3.45, CW 2.73–2.80, AL 3.18–3.50, AW 2.05–2.55, TL 6.03–6.68, FL 0.37–0.39, SL 1.39–1.43, SW 1.30–1.36. Distances between eyes: AME–AME 0.11, AME–ALE 0.07, ALE–ALE 0.56, PME–PME 0.06, PME–PLE 0.19, PLE–PLE 0.79. MOQAW 0.43, MOQPW 0.41, MOQL 0.51, PERW 1.02.

Length of leg segments (sequence from femur to tarsus, and total): I 2.48+1.25+2.35+2.05+0.60=8.73; II 2.25+1.17+1.85+1.85+0.58=7.70; III 1.73+0.98+1.25+1.35+0.55=5.86; IV 2.40+1.05+1.93+2.20+0.71=8.29.

General appearance as in Fig. 1. Carapace somewhat flattened, elevating slightly from eye region, highest at 3/4 carapace length; eye region distinctly narrowed and bulging; surface covered in short straight white setae medially and short black setae laterally; fovea long, distinct, at 2/3 carapace length; carapace uniform deep red, with slightly darker striae radiating from fovea (Fig. 1). All eyes with brown rings, lateral eyes on slightly raised tubercles; AER procurved, laterals slightly larger than medians; AME separated by distance slightly larger than their diameter; AME separated from ALE by 2/3 AME diameter; clypeus height equal to 1.5×AME diameter; PER slightly procurved, nearly straight, medians slightly larger than laterals; PME separated by distance equal to 2/3 their diameter; PME separated from PLE by distance approximately equal to 1.5× PME diameter; CW:PERW = 2.75:1. Chelicerae orange-red, with scattered long black setae on anterior surface; three teeth on promargin, proximal tooth smallest, median tooth largest; median and distal teeth closer to each other than to proximal tooth; retromargin with two widely separated teeth, distal tooth close to fang base, slightly smaller than proximal tooth; endites rounded on anterior prolateral margin, straight laterally and truncated posteriorly; labium 1.5 times broader than long; sternum shield-shaped, narrowed anteriorly, as broad as long, dark orange-red, brown along lateral margins. Legs stoutly built, particularly anterior pairs; all legs densely covered in short straight grey setae, particularly dorsum of patellae, tibiae and metatarsi; anterior tibiae and metatarsi strongly spined ventrally; coxae brown; femora I uniform dark red-orange, slightly darker distally; femora II dark orange-red, with grey distal band; femora III and IV yellow-orange, with narrow proximal and broad distal bands; patellae orange, with grey bands medially; tibiae I and II dark orange dorsally, grey ventrally; tibiae III and IV orange with grey markings dorsally and ventrally; metatarsi I–III orange dorsally with grey distal band; metatarsi IV yellow-orange dorsally with median and distal grey bands, grey ventrally; all tarsi dark brown; leg spination: femora: I *plv* 2 *rlv* 2; patellae: spineless; tibiae: I *plv* 8–9 *rlv* 7–8, II *plv* 7–8 *rlv* 6, IV *rl* 1 *plv* 1 *vt* 1; metatarsi: I *plv* 5 *rlv* 5, II *plv* 5 *rlv* 5, III *pl* 2 *plv* 1 *rlv* 1 *vt* 2, IV *plv* 2 *vt* 3. Abdomen oval, dorsal scutum absent; dorsum grey-brown, densely covered with short straight black and grey setae; five short paired black chevron

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markings slightly lateral of midline in posterior half of abdomen, each ending in small cream spot; single median cream spot above spinnerets; venter unsclerotised, pale grey with darker grey mottling, densely covered in short straight grey setae. Male palp bright orange, without spines; cymbium broad, with dense setal mat medially and modified clavate setae along prolateral and distal margins (Figs 18, 19, 22, 25); palpal tibiae with rounded ventral-retrolateral bump, curved dorsal-retrolateral apophysis (proximal position, at approximately 60° to dorsal position), directed dorsally, and dorsal lobe (Figs 22, 25); tip of apophysis with three distinctive denticles (Figs 18, 23, 25); tegulum broad, pale orange,



Figs 3–14. Scanning electron micrographs of *Vendaphaea lajuma* sp. n., male (3, 9, 10) and female (4–8, 11–14): (3) eye region, anterior view; (4) eye region, anteroventral view; (5) chelicerae, anterior view; (6) same, enlarged; (7) labium and endites; (8) serrula, enlarged; (9) leg I, retrolateral view; (10) tibia I, ventral view; (11) tibia and metatarsus I, retrolateral view; (12) tibia I, spine base; (13) tibia and metatarsus II, prolateral view; (14) tibia II, spines enlarged. Abbreviations: CH – chilum, MHT – maxillar hair tuft, SER – serrula, SS – shaggy seta.

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with thick embolus originating prolaterally, curving anticlockwise towards distal margin, with translucent conductor situated retrolaterally of embolus (Fig. 23); median apophysis spike-like, situated medially on tegulum within membranous section with a proximally-directed lobe (Figs 20, 22–24).

Female.

Measurements: CL 3.35–3.73, CW 2.60–2.83, AL 4.05–4.80, AW 3.10–3.90, TL 6.85–7.85, FL 0.35–0.45, SL 1.38–1.50, SW 1.30–1.45. Distances between eyes: AME–AME 0.11, AME–ALE 0.06, ALE–ALE 0.59, PME–PME 0.10, PME–PLE 0.19, PLE–PLE 0.84. MOQAW 0.48, MOQPW 0.44, MOQL 0.59, PERW 1.08.

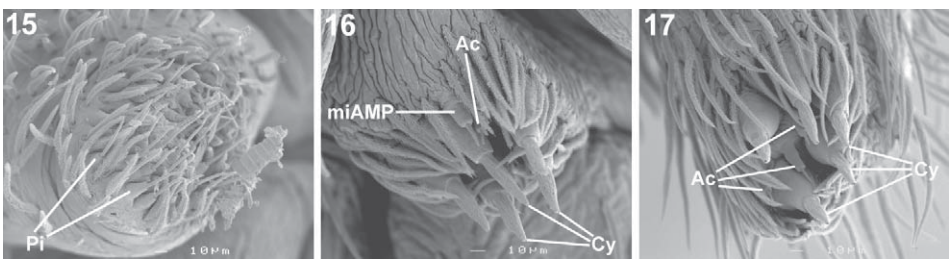
Length of leg segments (sequence from femur to tarsus, and total): I 2.63+1.39+2.44+2.15+0.60=9.21; II 2.35+1.25+1.90+1.88+0.57=6.95; III 1.82+1.08+1.30+1.44+0.55=6.19; IV 2.45+1.30+2.20+2.40+0.70=9.05.

General appearance, morphology, colouration and markings as for male (Fig. 2); anterior eye row procurved, laterals very slightly larger than medians; AME separated by distance slightly larger than their diameter; AME separated from ALE by 3/4 AME diameter; clypeus height slightly larger than AME diameter; PER slightly procurved, nearly straight, medians slightly larger than laterals; PME separated by distance equal to 2/3 their diameter; PME separated from PLE by distance approximately equal to 1.5× PME diameter; CW:PERW = 2.62:1. Chelicerae with three teeth on promargin, proximal tooth smallest, median tooth largest; median and distal teeth closer to each other than to proximal tooth; retromargin with two subequal teeth, distal tooth close to fang base. Leg spination: femora: I *plv* 2 *rlv* 2; patellae: spineless; tibiae: I *plv* 9 *rlv* 8–9, II *plv* 7–8 *rlv* 6–7; metatarsi: I *plv* 5 *rlv* 5, II *plv* 4–5 *rlv* 5, III *pl* 2 *plv* 1 *rlv* 1 *vt* 2, IV *plv* 3 *rlv* 1 *vt* 2. Epigyne with broad posterior lobe, with diamond-shaped median septum; copulatory openings situated laterally of septum (Fig. 26); spermathecae curved, projecting into body (Fig. 27), distinctly visible through integument (Fig. 26).

Holotype: ♂ SOUTH AFRICA: *Limpopo*: Soutpansberg Mountains, Lajuma Mountain Retreat, Woodland, 23°02.528'S:29°26.866'E, 3.xi.2004, M. Mafadza, sifting leaf litter (NCA 2008/562).

Paratypes: all from the same locality as holotype: Island 2, 23°01.921'S:29°26.193'E, 23.xi.2004, M. Mafadza, active searching, 2♂ (NCA 2005/2016), 1♂ 2♀ (NCA 2008/563); Island 3, 23°01.890'S:29°26.167'E, 23.xi.2004, M. Mafadza, active searching, 1♂ 1♀ (NCA 2005/2015); Grassland patch, 23°02.414'S:29°26.687'E, 6.ii.2008, C. Haddad, base of grass tussocks, 1♂ 7♀ (NCA 2008/514); same locality, 3–11.ii.2008, C. Haddad, base of grass tussocks, 2♀ (MPEG 15441).

Distribution: Apparently endemic to the western Soutpansberg Mountains in the Limpopo Province, South Africa. It was not collected during published surveys of the Kruger

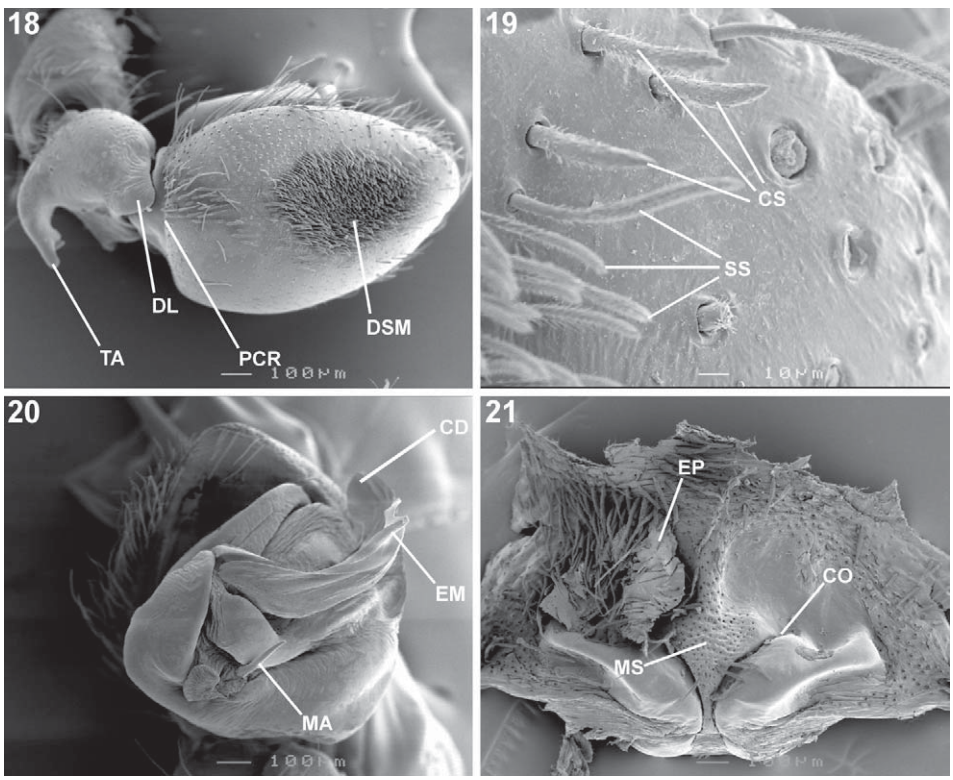


Figs 15–17. Scanning electron micrographs of *V. lajuma* sp. n. ♀ spinnerets: (15) ALS, (16) PMS, (17) PLS. Abbreviations: Ac – aciniform gland spigot, Cy – cylindrical gland spigot, miAMP – minor ampullate gland spigot, Pi – piriform gland spigot.

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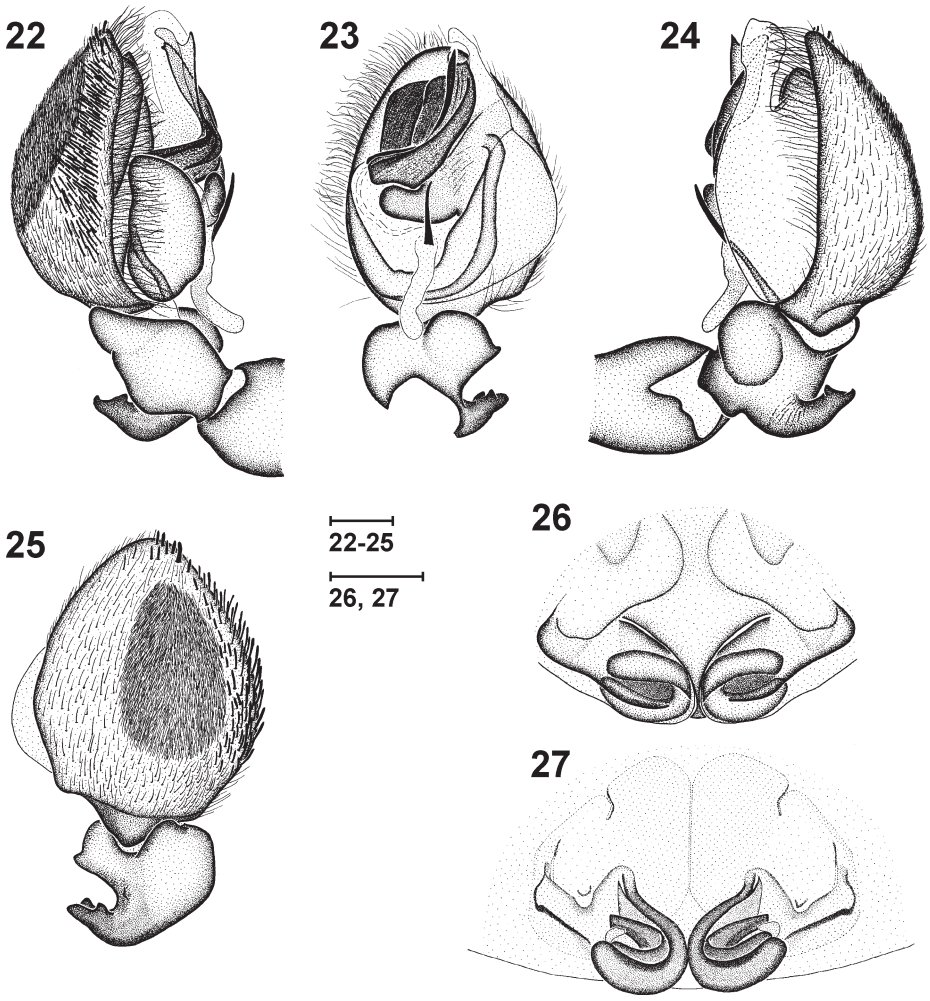
National Park (Dippenaar-Schoeman & Leroy 2003), Makalali Game Reserve (Whitmore *et al.* 2001), Nylsvley Nature Reserve (Dippenaar-Schoeman *et al.* 2009), Polokwane Nature Reserve (Dippenaar *et al.* 2008), or the Sovenga Hill inselberg near Polokwane (Modiba *et al.* 2005); all of these conserved areas fall within the Limpopo Province. It was also not collected at any of ten sites sampled as part of the South African National Survey of Arachnida in the Limpopo Province (S. Foord & A.S. Dippenaar-Schoeman, pers. comm): Bewaarkloof, Blouberg, Entabeni, Lekgalameetse, Leopard Creek Private Conservation Reserve, Marakele, Mogalakwena, Pafuri, Tshulu, and Wonderkop. This strongly suggests that *V. lajuma* sp. n. is a Soutpansberg endemic.

Habitat preferences: *V. lajuma* sp. n. was initially collected by Foord *et al.* (2008) from leaf litter of mixed woodland habitats in the Soutpansberg, where subsequent samples were also collected from montane savannah. The material collected by the author (NCA 2008/514), including 20 additional specimens that were sent to various colleagues for morphological and genetic studies, were all collected from the bases of grass tussocks in montane savannah.



Figs 18–21. Scanning electron micrographs of *Vendaphaea lajuma* sp. n. genitalia: (18) male palp, dorsal view; (19) cymbial setae, enlarged; (20) male palpal tegulum, ventral view; (21) female epigyne, ventral view. Abbreviations: CD – conductor, CO – copulatory opening, CS – clavate cymbial setae, DL – dorsal lobe of palpal tibia, DSM – dorsal setal mat, EM – embolus, EP – epigynal plug, MA – median apophysis, MS – median septum, PCR – proximal cymbial ridge, SS – setal mat setae, TA – tibial apophysis.

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Figs 22–27. *Vendaphaea lajuma* sp. n., male (22–25) and female (26, 27) genitalia: (22) left palp, prolateral view; (23) same, ventral view; (24) same, retrolateral view; (25) same, dorsal view; (26) epigyne, ventral view; (27) same, dorsal view. Scale bars = 0.25 mm.

DISCUSSION

Vendaphaea is a very distinctive genus and can be easily recognised from *Austrophaea*, *Mandaneta* and *Pronophaea*, to which it seems most closely allied. This group of genera can be recognised by several synapomorphic characters that may (once all the genera have been revised) support the monophyly of this group within Corinnidae, be it at tribal or subfamilial level: strongly spined femora I, and strong ventral leg spines on the anterior tibiae and metatarsi; procurved eye rows, posterior row nearly straight; broad male palpal cymbium with dense dorsal setal mat (= cymbial scopula) and modified setae; male palpal tegulum with a short, fine median apophysis; and simple female genitalic structure (see Lessert 1923; Lawrence 1937, 1952; Haddad 2007). The South American genera *Ianduba* Bonaldo, 1997 and *Olbus* Simon, 1880 may also belong to

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this group, as their anterior legs are heavily spined, femoral spines are present on leg I in both sexes, male genitalia feature a dorsal cymbial setal mat, conductor and tegular median apophysis, and modified cymbial setae are also found in *Olbus* (Bonaldo 1997; Ramírez *et al.* 2001). Furthermore, the African genera *Procopius* Thorell, 1899 and *Pseudocorinna* Simon, 1909 also feature heavily spined legs and a palpal median apophysis (Simon 1909; Ramírez *et al.* 2001).

The currently accepted definition of the subfamily Corinninae (Bonaldo 2000; Deeleman-Reinhold 2001) excludes these genera from this subfamily (particularly the presence of a median apophysis on the male palpal tegulum), and they also do not belong to the Phrurolithinae, Castianeirinae and Trachelinae. They should thus be considered Corinnidae *incertae sedis* until a comprehensive cladistic analysis has been performed and the generic and subfamily limits of Corinnidae can be more thoroughly clarified.

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Stefan Foord and Maria Mafadza (University of Venda, Thohoyandou) and Ansie Dippenaar-Schoeman (National Collection of Arachnida, Pretoria) are thanked for collecting and loaning the material that formed the basis of this study. Martin Ramírez (Museo Argentino de Ciencias Naturales, Buenos Aires) and Jan Bosselaers ("Dochterland", Beerse) are thanked for their useful comments on the manuscript, particularly regarding spinneret morphology. This work was funded by the National Research Foundation of South Africa through its Thuthuka programme (grant TTK2008050500003). Any opinion, findings and conclusions or recommendations expressed in this material are those of the author and therefore the NRF does not accept any liability in regard thereto.

REFERENCES

Bonaldo, A.B. 1997. On the new neotropical spider genus *Ianduba* (Araneae, Corinnidae). *Iheringia (Zoologia)* **83**: 165–180.

———2000. Taxonomia da subfamília Corinninae (Araneae, Corinnidae) nas regiões Neotropica e Neárctica. *Iheringia (Zoologia)* **89**: 3–148.

Bosselaers, J. & Jocqué, R. 2000*a*. *Hortipes*, a huge genus of tiny Afrotropical spiders (Araneae, Liocranidae). *Bulletin of the American Museum of Natural History* **256**: 1–108.

———2000*b*. Studies in Corinnidae: transfer of four genera and description of the female of *Lessertina mutica* Lawrence, 1942. *Tropical Zoology* **13**: 305–325.

———2002. Studies in Corinnidae: cladistic analysis of 38 corinnid and liocranid genera, and transfer of Phrurolithinae. *Zoologica Scripta* **31**: 241–270.

Deeleman-Reinhold, C.L. 2001. *Forest spiders of South-East Asia: with a revision of the sac and ground spiders (Araneae: Clubionidae, Corinnidae, Liocranidae, Gnaphosidae, Prodidomidae and Trochanterriidae* [sic]*).* Leiden: Brill.

Dippenaar, S., Modiba, M.A., Khoza, T.T. & Dippenaar-Schoeman, A.S. 2008. A checklist of spiders (Arachnida, Araneae) of the Polokwane Nature Reserve, Limpopo Province, South Africa. *Koedoe* **50**: 10–17.

Dippenaar-Schoeman, A.S. & Leroy, A. 2003. A check list of the spiders of the Kruger National Park, South Africa (Arachnida: Araneae). *Koedoe* **46**: 91–100.

Dippenaar-Schoeman, A.S., van den Berg, A. & Prendini, L. 2009. Spiders and scorpions (Arachnida: Araneae, Scorpiones) of the Nylsvley Nature Reserve, South Africa. *Koedoe* **51**: 1–9.

Foord, S.H., Mafadza, M.M., Dippenaar-Schoeman, A.S. & van Rensburg, B.J. 2008. Micro-scale heterogeneity of spiders (Arachnida: Araneae) in the Soutpansberg, South Africa: a comparative survey and inventory in representative habitats. *African Zoology* **43**: 156–174.

Haddad, C.R. 2004. A revision of the African spider genus *Graptartia* (Araneae: Corinnidae). *African Entomology* **12**: 71–87.

———2006*a*. A new species of *Corinnomma* (Araneae: Corinnidae) from southern and eastern Africa, with taxonomic notes on *C. olivaceum* and *C. semiglabrum*. *African Invertebrates* **47**: 71–83.

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———2006*b*. *Spinotrachelas*, a new genus of tracheline sac spiders from South Africa (Araneae: Corinnidae). *African Invertebrates* **47**: 85–93.
———2007. A revision of the endemic South African dark sac spider genus *Austrophaea* Lawrence, 1952 (Araneae: Corinnidae). *African Invertebrates* **48** (2): 47–53.
Haddad, C.R. & Lyle, R. 2008. Three new genera of tracheline sac spiders from southern Africa (Araneae: Corinnidae). *African Invertebrates* **49** (2): 37–76.
Lawrence, R.F. 1937. A collection of Arachnida from Zululand. *Annals of the Natal Museum* **8**: 211–273.
———1952. New spiders from the eastern half of South Africa. *Annals of the Natal Museum* **12**: 183–226.
Lessert, R. de 1923. Araignées du sud de l'Afrique. *Revue suisse de Zoologie* **30**: 161–212.
Lyle, R. 2008. *Tracheline sac spiders of the Afrotropical Region (Araneae: Corinnidae), with revisions of three genera.* MSc thesis, University of the Free State, Bloemfontein.
Lyle, R. & Haddad, C.R. 2006. A revision of the Afrotropical tracheline sac spider genus *Thysanina* Simon, 1910 (Araneae: Corinnidae). *African Invertebrates* **47**: 95–116.
———In press. *Planochelas*, a new genus of tracheline sac spiders from West and Central Africa (Araneae: Corinnidae). *Annals of the Transvaal Museum*.
Modiba, M.A., Dippenaar, S.M. & Dippenaar-Schoeman, A.S. 2005. A checklist of spiders from Sovenga Hill, an inselberg in the Savanna Biome, Limpopo Province, South Africa (Arachnida: Araneae). *Koedoe* **48**: 109–115.
Platnick, N.I. & Ewing, C. 1995. A revision of the tracheline spiders (Araneae, Corinnidae) of southern South America. *American Museum Novitates* **3128**: 1–41.
Ramírez, M.J., Lopardo, L. & Bonaldo, A.B. 2001. A revision of the Chilean spider genus *Olbus*, with notes on the relationships of the Corinnidae (Arachnida, Araneae). *Insect Systematics and Evolution* **31**: 441–462.
Simon, E. 1909. Arachnides recueillis par L. Fea sur la côte occidentale d'Afrique. 2e partie. *Annali del Museo civico di storia naturale Genova* **44**: 335–449.
Whitmore, C., Slotow, R., Crouch, T.E. & Dippenaar-Schoeman, A.S. 2001. Checklist of spiders (Araneae) from savanna ecosystem, Northern Province, South Africa: including a new family record. *Durban Museum Novitates* **26**: 10–19.

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