

A Revision of the Afrotropical Species of *Festucula* Simon, 1901 (Araneae: Salticidae)

Authors: Azarkina, Galina N., and Foord, Stefan H.

Source: African Invertebrates, 55(2) : 351-375

Published By: KwaZulu-Natal Museum

URL: <https://doi.org/10.5733/afin.055.0201>

The BioOne Digital Library (<https://bioone.org/>) provides worldwide distribution for more than 580 journals and eBooks from BioOne's community of over 150 nonprofit societies, research institutions, and university presses in the biological, ecological, and environmental sciences. The BioOne Digital Library encompasses the flagship aggregation BioOne Complete (<https://bioone.org/subscribe>), the BioOne Complete Archive (<https://bioone.org/archive>), and the BioOne eBooks program offerings ESA eBook Collection (<https://bioone.org/esa-ebooks>) and CSIRO Publishing BioSelect Collection (<https://bioone.org/csiro-ebooks>).

Your use of this PDF, the BioOne Digital Library, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Digital Library content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne is an innovative nonprofit that sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

A revision of the Afrotropical species of *Festucula* Simon, 1901 (Araneae: Salticidae)

Galina N. Azarkina¹ and Stefan H. Foord²

¹Laboratory of Systematics of Invertebrate Animals, The Institute of Systematics and Ecology of Animals, Siberian Branch of the Russian Academy of Sciences, Frunze Street 11, Novosibirsk, 630091 Russia; urmakuz@gmail.com

²Department of Zoology, South African Research Chair on Biodiversity Value & Change and Centre for Invasion Biology, Thohoyandou, 0950 South Africa; stefan.foord@univen.ac.za

ABSTRACT

The Afrotropical species of the jumping spider genus *Festucula* Simon, 1901 are revised. The genus now contains eight species. Three new species, *F. haddadi* sp. n. (♂♀ from South Africa), *F. leroyae* sp. n. (♂♀ from South Africa and Namibia) and *F. robustus* sp. n. (♂♀ from South Africa) are described. *F. australis* Lawrence, 1927 is removed from its synonymy with *F. festuculaeformis* (Lessert, 1925). *F. lineata* Simon, 1901, previously treated as *nomen dubium*, is revalidated and redescribed. Three further species, *F. australis* Lessert, 1933, *F. festuculaeformis* Lessert, 1933 and *F. lawrencei* Lessert, 1933, are redescribed.

KEY WORDS: New species, identification key, descriptions, jumping spiders.

INTRODUCTION

The genus *Festucula* has an Afrotropical distribution, except for *F. vermiformis* Simon, 1901, which has been recorded from Egypt, Sudan and Israel (Prószyński 2003). The genus has a strong association with grasses and displays several co-evolved, adaptive characteristics such as a very elongate abdomen, a flat carapace, and light- to dark-brown longitudinal bands along the carapace and abdomen, all of which aid crypsis in grasses. It seems that evolutionary selection for these adaptive traits has been strong in grasslands as they have independently evolved in several other unrelated spider genera typically found in habitats dominated by graminoids, including *Runcinia* (Thomisidae), *Tibellus* (Philodromidae) and *Poachelas* (Trachelidae).

The taxonomic history of *Festucula* starts with E. Simon, who erected the genus in 1901 to accommodate *F. vermiformis* (female, from Egypt) and *F. lineata* (female, from Senegal). The period between 1923 and 1941 mainly relates to the work by R. de Lessert, who described *Pseudicius festuculaeformis* (male only) in 1924 and later transferred it to *Festucula* (Lessert 1933). He also described the male of *F. lawrencei* in 1933. Lawrence (1927) described *F. australis* from Namibia while Berland and Millot (1941) described *F. monticola* from Guinea and provided a short bibliography for the six known species of the genus.

The genus was first revised by Wesołowska (1992), who synonymised *F. australis* with *F. festuculaeformis* and considered *F. lineata* and *F. monticola*, *nomina dubia*. However, on the basis of the original figure of the female epigyne (Berland & Millot 1941: fig. 48), Prószyński (2003) suspected that *F. monticola* might be a synonym of *F. vermiformis* (contra Wesołowska 1992). Wesołowska and Russell-Smith (2000), Wesołowska and Haddad (2009) and Haddad and Wesołowska (2011) subsequently recorded *F. lawrencei* from Tanzania and South Africa.

Currently, only three valid species are included in the genus: *F. festuculaeformis*, *F. lawrencei* and *F. vermiformis* (Platnick 2014). The synonymy of *F. australis* with *F. festuculaeformis* seems to be erroneous, in spite of Lessert identifying the male from Congo as *Pseudicius festuculaeformis* instead of *F. australis*. Moreover, the records of *F. lawrencei* from Tanzania, which almost completely correspond with the type locality of *F. festuculaeformis*, are also erroneous. This study therefore aims to (1) diagnose and (re)describe seven Afrotropical species of the genus *Festucula* on the basis of the (re) examination of types and all available material, (2) map species distributions, and (3) describe three new species from South Africa and Botswana.

MATERIAL AND METHODS

This work is based on material deposited in museums in South Africa and Europe. Specimens for this study were borrowed from the following museums (curators in parenthesis):

- ISEA – Institute of Systematics and Ecology of Animals, Novosibirsk, Russia (G.N. Azarkina);
- MHNG – Muséum d'histoire naturelle, Genève, Switzerland (P. Schwendinger);
- MRAC – Musée Royal de l'Afrique Centrale, Tervuren, Belgium (R. Jocqué);
- NCA – National Collection of Arachnida, Plant Protection Research Institute, Pretoria/Tshwane, South Africa (P. Marais);
- NMBA – National Museum, Bloemfontein, South Africa (L. Lotz);
- NMSA – KwaZulu-Natal Museum, Pietermaritzburg, South Africa (C. Stoffels);
- SAMC – Iziko South African Museum, Cape Town, South Africa (D. Larsen).

A total of 287 specimens were examined. Specimens were studied in ethanol and their coloration refers to that of preserved specimens. All drawings were made with the aid of a reticular eyepiece attached to an MBS-10 stereomicroscope. Digital images were taken with an Olympus SZX16 with attached Olympus E-520 camera and Zeiss Stemi 2000. Images were stacked using the CombineZP and Helicon Focus software. Microphotographs were taken with a Hitachi TM-1000 scanning electron microscope: material was mounted using adhesive and dried for two days.

The drawings were edited in Adobe Photoshop. Left palps were illustrated except for Figures 29–31, 33–34 and 77–81, where the right palps were mirrored. If locality coordinates were not provided on data labels or were not available in the institutional databases, they were traced using the Geographical Names list (<http://www.geographic.org>) and old topographic maps, and are presented in square brackets.

The following abbreviations are used in this paper:

- | | |
|--------------------------------|--------------------------------|
| AG – accessory glands | PME – posterior median eyes |
| ALE – anterior lateral eyes | PLE – posterior lateral eyes |
| AME – anterior median eyes | Pt – patella |
| Fm – femur | Tb – tibia |
| LTA – lateral tibial apophysis | VTA – ventral tibial apophysis |
| Mt – metatarsus | |

The sequence of leg segments in measurement data is as follows: femur + patella + tibia + metatarsus + tarsus. All measurements are in millimetres. Leg spination follows Ono (1988).

TAXONOMY

Genus *Festucula* Simon, 1901

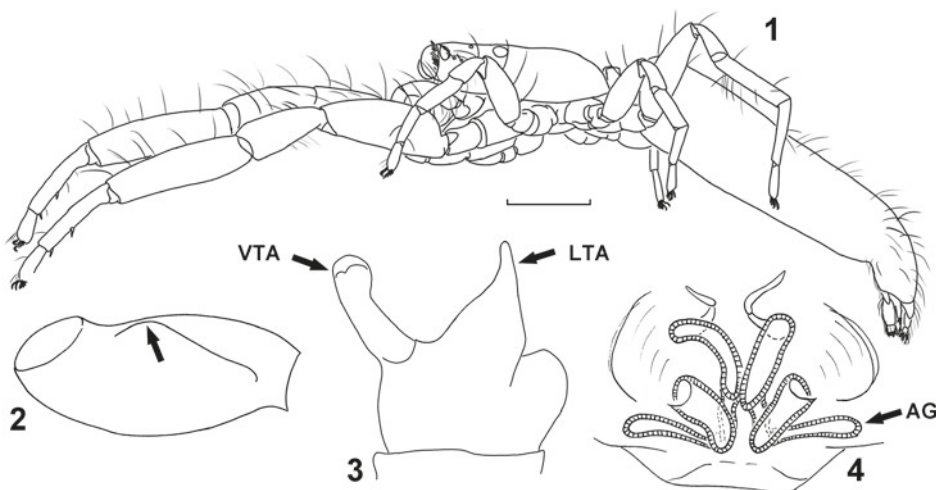
Type species: *Festucula vermiformes* Simon, 1901, by original designation.

Diagnosis: *Festucula* species share the following combination of characters: a flat carapace and very long and narrow abdomen (Fig. 1). A simple leg-carapace stridulatory mechanism (Figs 5–7) and bulbus morphology suggest an affinity to *Pseudicius* Simon, 1885 (*cinctus*-group *sensu* Prószyński 2013). *Festucula* have a simple, blade-like embolus fused immovably to the tegulum, bearing a retrolateral bump (Maddison 1987), and belong to the subfamily Heliophaninae (*sensu* Prószyński 1976; Maddison & Hedin 2003).

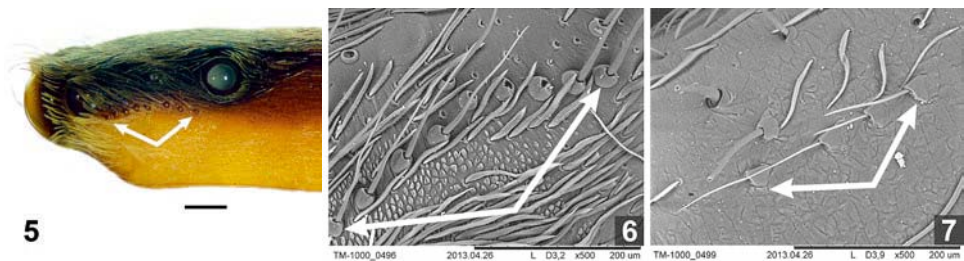
Description:

Medium-sized spiders, total length 4.7 to 9.2 mm. Sexes alike in general body shape and coloration, sometimes with sexual dimorphism in size. Carapace very low, height is only 25–30% of its length. Eyes: AME largest, PME about midway between ALE and PLE, slightly closer to PLE, ocular quadrangle between 42% and 47% of carapace length. Clypeus very low. Chelicerae small, unidentate, with two promarginal teeth and one retromarginal tooth. Maxillae long, slightly curved, convergent. Labium rectangular, longer than wide. Pedicel medium, usually visible in dorsal view. Abdomen very long and narrow, slightly bent downwards at its rear end (Fig. 1). Width is between 19% and 30% of its length. Legs: leg I very long and robust, all legs and palps with very long bristles.

Leg formula: males and females I, IV, II, III or I, IV, III, II. Leg spination: uniform in both sexes, pattern: leg I – Tb v 0-1-1-1 or 0-1-1-1-0; Mt v 0-2-2ap; leg II – Mt v 1-2ap; leg III – Mt v 0-1ap; leg IV – Mt v 0-1ap. Some species and sexes without spines on legs II, III, IV (i.e. spination only on leg I, e.g. *F. lawrencei*; or spination on leg I and III/IV, e.g. both sexes of *F. festuculaeformis*, females of *F. haddadi* and *F. robustus*).



Figs 1–4. *Festucula* spp.: (1) general appearance, lateral view; (2) male palpal femur, prolateral view; (3) tibial apophysis, retrolateral view; (4) spermathecae, dorsal view.



Figs 5–7. *Festucula* spp.: (5, 6) carapace stridulatory organs; (7) leg stridulatory organs. Scale bar (5): 0.2 mm.

Stridulatory organs (*sensu* Maddison 1987): present in both sexes and represent a leg-carapace stridulatory mechanism, with narrow band of 7–9 seta-bearing tubercles on carapace below lateral eyes and 4–6 seta-bearing tubercles on prolateral surface of femora of leg I (Figs 5–7, arrowed).

Number of tubercles on carapace and femora varies within species and sexes. Male palp: femur with a small bulge on its inner lateral surface (Fig. 2, arrowed); tibia short, with curved ventral tibial apophysis (VTA) and relatively straight retrolateral tibial apophysis (LTA) (Fig. 3, arrowed); cymbium oval; embolus short, slightly curved, originating prolaterally distally on tegulum; tegulum with prolateral basal lobe. Female genitalia: simple, epigyne a flat plate, with a pair of copulatory pores situated in two depressions in the lower part of epigyne; insemination ducts short, broad at entrances, with long accessory glands (AG) often located near entrances (Fig. 4, arrowed).

Composition:

Festucula Simon, 1901 includes the following eight species:

- F. australis* Lawrence, 1927
- F. festuculaeformis* (Lessert, 1925)
- F. haddadi* sp. n.
- F. lawrencei* Lessert, 1933
- F. leroyae* sp. n.
- F. lineata* Simon, 1901
- F. robustus* sp. n.
- F. vermiformis* Simon, 1901

Distribution: Throughout Africa and the Levant (Fig. 26).

Key to species of *Festucula* Simon, 1901

- 1 Males2
- Females8
- 2 Abdomen with broad brown band dorsally, covered in the middle with whitish short scales3
- Abdomen with two longitudinal brown and yellow median stripes dorsally.....4
- 3 VTA narrow, thin, slightly curved (Figs 8–9, arrowed).....**leroyae** sp. n.
- VTA broad, robust, bent in the middle (Figs 10–11, arrowed) **robustus** sp. n.
- 4 Tibial apophysis with three well-marked teeth between VTA and LTA (Fig. 12, arrowed)5

- Tibial apophysis with teeth between VTA and LTA weakly developed6
- 5 VTA deeply bifurcated distally (Fig. 13, arrowed) **lineata** Simon, 1901
- VTA not bifurcated distally, with lobe on internal surface (Fig. 14, arrowed)
..... **australis** Lawrence, 1927
- 6 VTA thin, slightly curved, LTA relatively narrow (Fig. 15)..... **lawrencei** Lessert,
..... 1933
- VTA broad 7
- 7 Angle between embolus and apical end of tegulum more than 45° (Fig. 16, arrowed
..... **festaculaeformis** (Lessert, 1925)
- Angle between embolus and apical end of tegulum less than 45° (Fig. 17, arrowed)
..... **haddadi** sp. n.
- 8 Dorsum with longitudinal broad brown band9
- Dorsum with two longitudinal brown stripes..... 10
- 9 Middle part of insemination ducts tube-like (Fig. 18, arrowed) **robustus** sp. n.
- Middle part of insemination ducts bean-like (Fig. 19, arrowed), compact .. **leroyae**
..... sp. n.
- 10 Copulatory pores situated near epigastric fold (Fig. 20, arrowed)..... 11
- Copulatory pores situated in the middle part of epigyne (Fig. 21, arrowed) 12
- 11 Middle part of insemination ducts long (Fig. 22, arrowed)
..... **australis** Lawrence, 1927
- Middle part of insemination ducts short (Fig. 23, arrowed).....
..... **vermiformis** Simon, 1901
- 12 Spermathecae relatively short and broad (Fig. 24, arrowed) **haddadi** sp. n.
- Spermathecae relatively long and narrow (Fig. 25, arrowed)
..... **festaculaeformis** (Lessert, 1925)

Festucula australis Lawrence, 1927

Figs 14, 22, 27–44

Festucula australis Lawrence, 1927: 59, plate 2, fig. 44 (♀, examined).

Festucula australis: Lessert 1933: 149, figs 67–69, 71 (♀, ♂ description, examined).

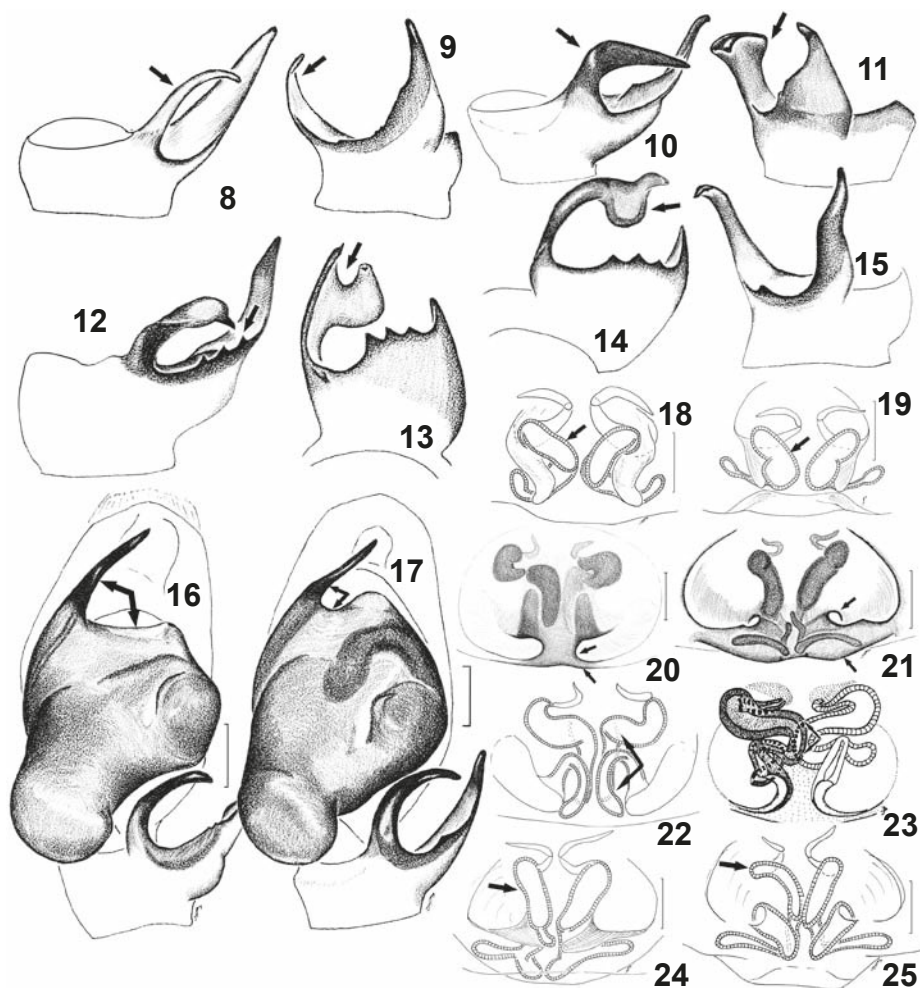
Festucula festaculaeformis: Wesołowska 1992 (in part, misidentified): 46, figs 2–21, 23–25.

Diagnosis: The male of this species is most similar to that of *F. lineata*, but can be distinguished by the shape of the ventral tibial apophysis that is not bifurcated and has a big apical swelling (Figs 30–31). The female of *F. australis* resembles that of *F. vermiformis* and can be distinguished by the length of the middle part of the insemination ducts—long in *F. australis* (Fig. 22) and short in *F. vermiformis* (Fig. 23)—and the position of the thin and long accessory glands of spermathecae, which are situated in the middle part of the insemination ducts in *F. vermiformis* (Fig. 23), while posteriorly in *F. australis* (Fig. 35, arrowed).

Description:

Male.

Measurements: Carapace: 1.70–1.90 long, 1.15–1.30 wide, 0.50–0.65 high. Abdomen: 2.90–4.20 long, 0.85–1.05 wide. Eye field: 0.75–0.80 long, anterior 0.95–1.00 wide,



Figs 8–25. *Festucula* spp.: (8) palpal tibia of *F. leroyae* sp. n., ventral view; (9) ditto, retrolateral view; (10) palpal tibia of *F. robustus* sp. n., ventral view; (11) ditto, retrolateral view; (12) palpal tibia of *F. australis* Lawrence, 1927, retrolateral view; (13) palpal tibia of *F. lineata* Simon, 1901, basal-retrolateral view; (14) ditto, *F. australis* Lawrence, 1927; (15) ditto, *F. lawrencei* Lessert, 1933; retrolateral view; (16) palp of *F. festuculaeformis* (Lessert, 1925), ventral view; (17) ditto, *F. haddadi* sp. n.; (18) epigyne of *F. robustus* sp. n., dorsal view; (19) ditto, *F. leroyae* sp. n.; (20) ditto, *F. australis* Lawrence, 1927, ventral view; (21) ditto, *F. haddadi* sp. n.; (22) spermathecae of *F. australis* Lawrence, 1927, dorsal view; (23) ditto, *F. vermiformis* Simon, 1901 (from Prószyński, 1987; with modification); (24) ditto, *F. haddadi* sp. n.; (25) ditto, *F. festuculaeformis* (Lessert, 1925).

posterior 1.00–1.10 wide. Cheliceral length 0.50–0.60. Clypeal height 0.05–0.10. Diameter of AME 0.30–0.40. Length of leg segments (male from DR Congo, MRAC 139514): I 1.50+1.00+1.60+1.10+0.50; II 0.95+0.45+0.55+0.45+0.30; III 0.80+0.45+0.40+0.55+0.35; IV 1.30+0.50+0.90+0.75+0.45.

Leg spination: I: Tb v 0-1-1-1; Mt v 0-2-2ap. II: Mt v 1-2ap. III: Mt v 0-1ap. IV: Mt v 0-1ap.

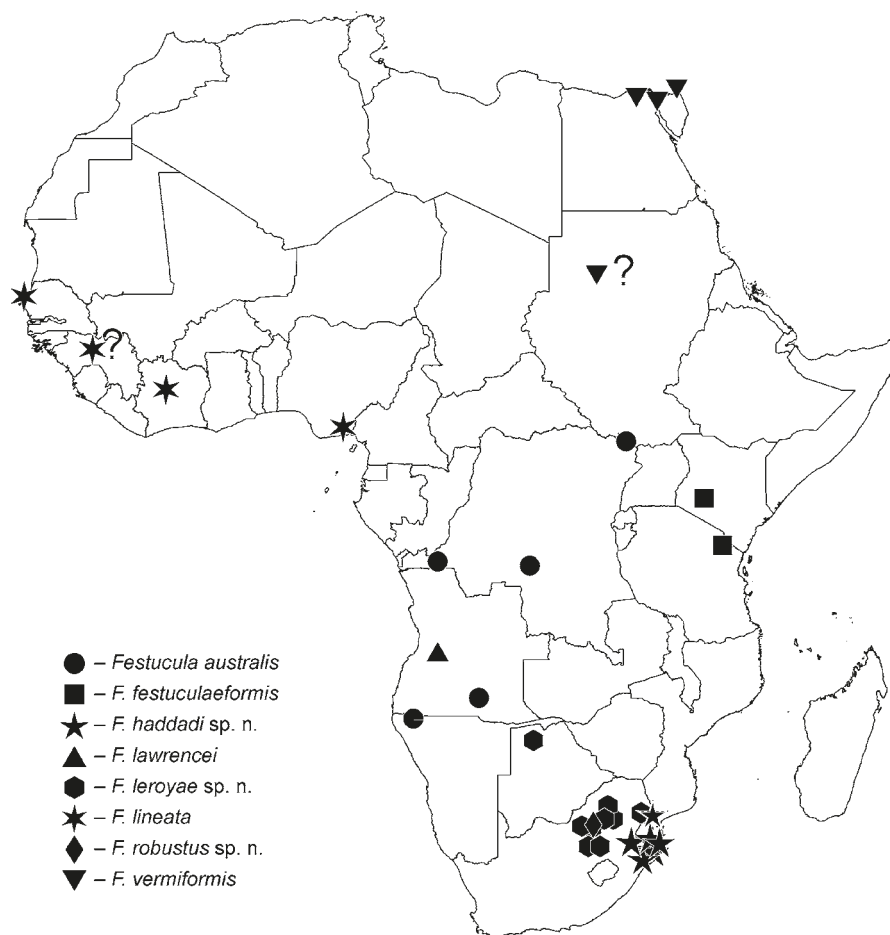
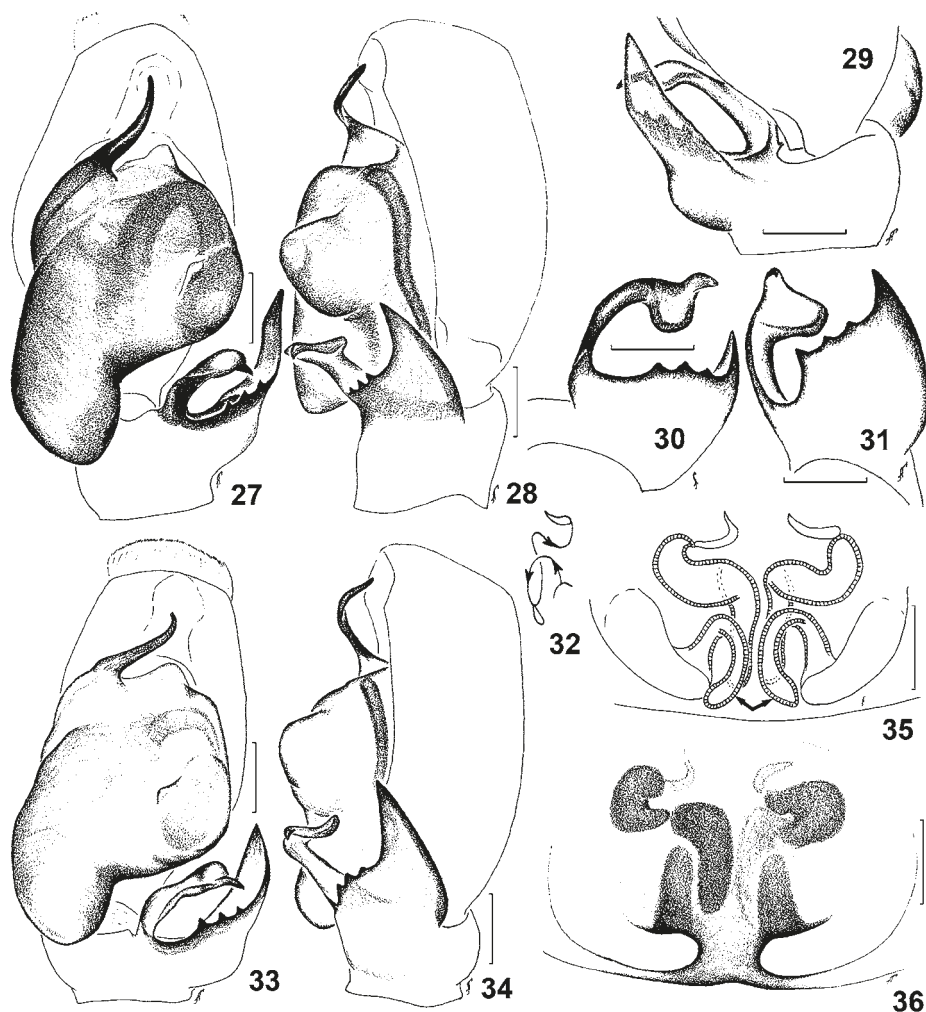


Fig. 26. Distribution records of *Festucula* spp. (? – exact locality unknown).

Coloration (Figs 37–40): Carapace low, flat, dark brown with median and two lateral yellow bands, covered with white adpressed hairs. Clypeus brown, very low, covered with white hairs (Fig. 40). Chelicerae and sternum dark brown. Abdomen yellow-brown, dorsum with two longitudinal brown stripes (Figs 37–39). Booklungs yellow, spinnerets brown. Legs I long and robust, brown. The rest of legs and palps yellow-brown. All legs and palps covered with long thin bristles. Palpal structure as in Figs 27–31, 33–34.

Female.

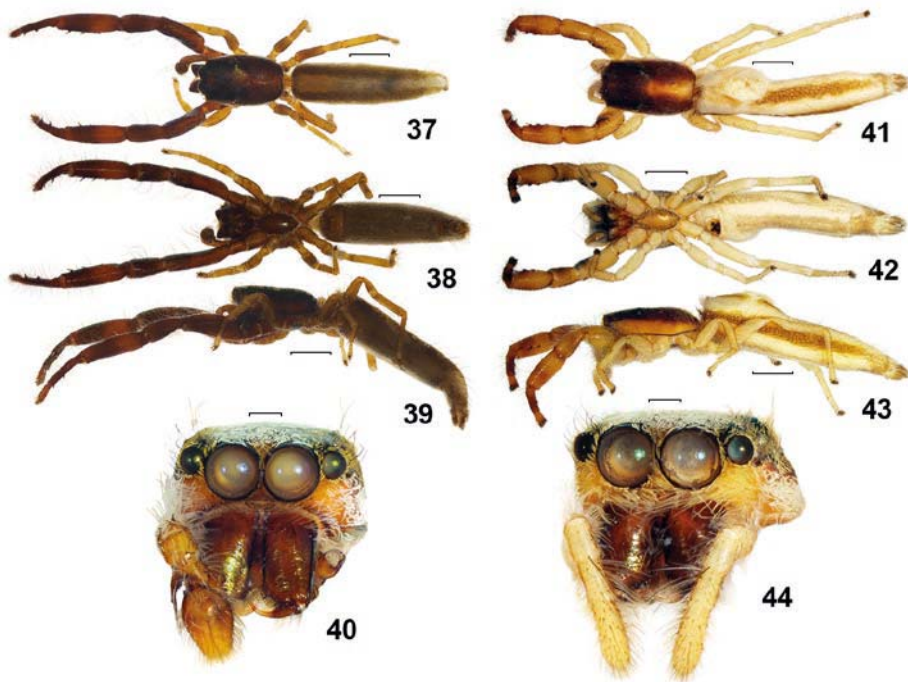
Measurements: Carapace: 1.90–2.20 long, 1.20–1.40 wide, 0.60–0.70 high. Abdomen: 3.75–4.90 long, 1.20 wide. Eye field: 0.90–1.00 long, anterior 1.00–1.15 wide, posterior 1.05–1.20 wide. Cheliceral length 0.40–0.50. Clypeal height 0.10. Diameter of AME 0.40. Length of leg segments (female from DR Congo, MRAC 139514): I $1.30+0.90+1.00+0.80+0.40$; II $0.90+0.50+0.50+0.45+0.30$; III $0.80+0.50+0.50+0.55+0.40$; IV $1.30+0.50+1.00+0.85+0.45$.



Figs 27–36. *Festucula australis* Lawrence, 1927: (27, 33) male palp, ventral view; (28, 34) ditto, retrolateral view; (29) tibial apophysis, dorsal view; (30) ditto, ventro-retrolateral view; (31) ditto, retrolateral-apical view; (32) diagrammatic course of the insemination ducts; (35) spermathecae, dorsal view; (36) epigyne, ventral view. (27–31, 32–36) from Congo D.R., Kasai; (33–34) from Angola. Scale bars: 0.1 mm.

Leg spination: I: Tb v 0-1-1-1; Mt v 0-2-2ap. II: Mt v 1-2ap. III: Mt v 0-1ap. IV: Mt v 0-1ap.

Coloration (Figs 41–44): Carapace low, flat, brown with median and two lateral yellow bands, covered with white adpressed hairs. Some specimens with median band faded in the ocular area. Clypeus brown, very low, covered with white hairs (Fig. 44). Chelicerae dark brown. Sternum yellow-brown. Abdomen yellow, dorsum with two longitudinal brown stripes (Figs 41–43). Booklungs yellow, spinnerets yellow-brown. Legs I long and robust, brown, with dark brown rings. The rest of legs and palps yellow. All legs covered with long thin bristles. Structure of epigyne and spermathecae as in Figs 32, 35–36.



Figs 37–44. *Festucula australis* Lawrence, 1927, general appearance: (37) male, dorsal view; (38) ditto, ventral view; (39) ditto, lateral view; (40) male “face”; (41) female, dorsal view; (42) ditto, ventral view; (43) ditto, lateral view; (44) female “face”. Scale bars: (37–39, 41–43) 1 mm, (40, 44) 0.2 mm.

Type material examined: Holotype ♀ (SAMC, #B6112) South-West Africa, Kunene R., C 1712BC, March 1923, R.F. Lawrence [=NAMIBIA, Kunene Region, Kunene R., c. 17°15'S 12°30'E, iii. 1923, R.F. Lawrence].

Other material examined: ANGOLA: 1♂ 1♀ Tschitunda [=Chitundo], 15°46'S 18°16'E, date unknown, A. Monard (MRAC 12009-12010); 1juv. same data as previous (MRAC 12011). DR CONGO: 1♂ 1♀ Kasai, on bridge, Lulua R., 15 km W of Lulua bourg [=Kananga], 05°54'S 22°25'E 19.viii.1971, C. Massin, D. Pierret (MRAC 139514); 1♂ Kisantu, 05°08'S 15°06'E, 1919, R.P. Vanderyst (MRAC 11813); 1♂ Faradje [=Orientale, Faradje, c. 03°44'N 29°43'E, date and collector unknown] (MHNG).

Distribution: DR Congo, Angola and Namibia (Fig. 26).

Comments: Specimens from Angola are smaller in body size than those from DR Congo, but their palp sizes are the same. All exemplars from the west coast of Africa belong to *F. australis*. These were previously identified by Wesolowska as *F. festuculaeformis* on the basis of Lessert's erroneous identification of a male from Faradje (DR Congo) as *Pseudicius festuculaeformis* and the suggestion that Lessert's drawings are not fully comparable (see Wesolowska 1992: 50). The shape of the tibial apophysis and the number of teeth on the inner edge of the LTA are species-specific (contra Wesolowska 1992).

Festucula festuculaeformis (Lessert, 1925)

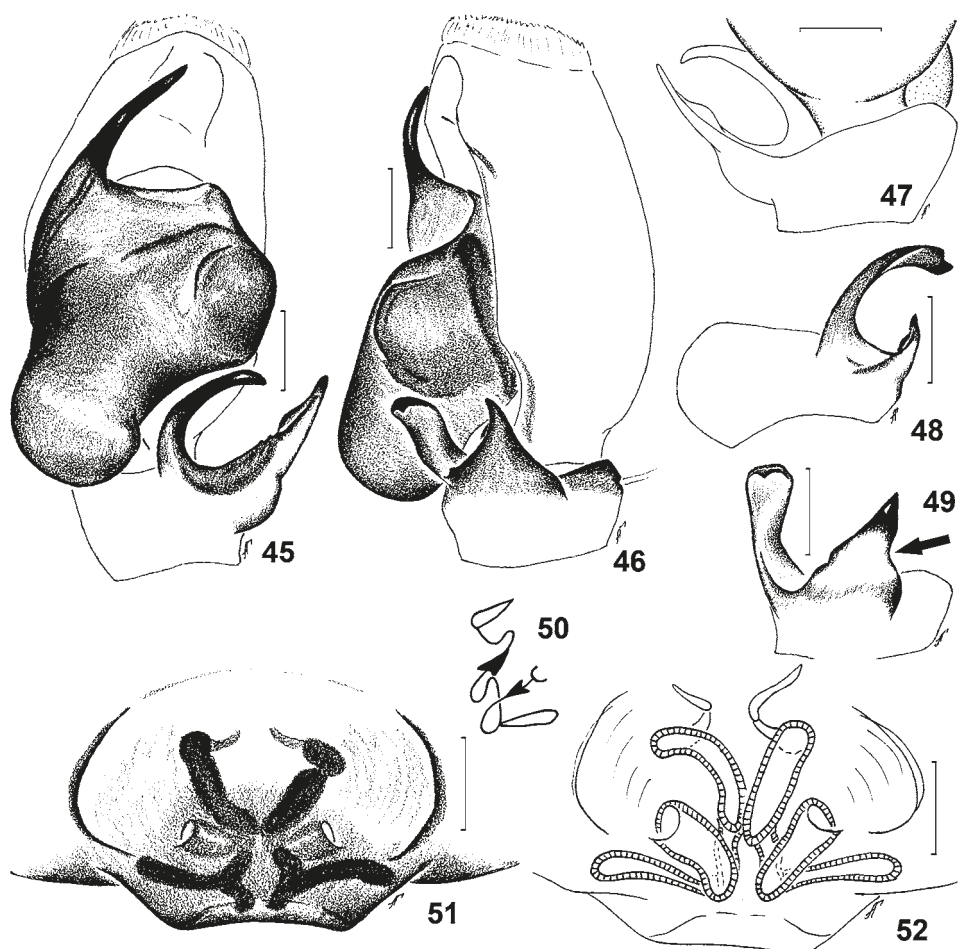
Figs 16, 25, 45–60

Pseudicius festuculaeformis Lessert, 1925: 465, figs 50–54 (♂, only first leg, examined).

Festucula festuculaeformis: Lessert 1933: 149; Wesolowska 1992 (in part): 46, fig. 22.

F. lawrencei: Wesolowska & Russell-Smith 2000 (misidentified): 28, figs 49–51.

F. festuculaeformis: Wesolowska & Edwards 2012: 746, figs 44–45 (♀) (Misidentification).

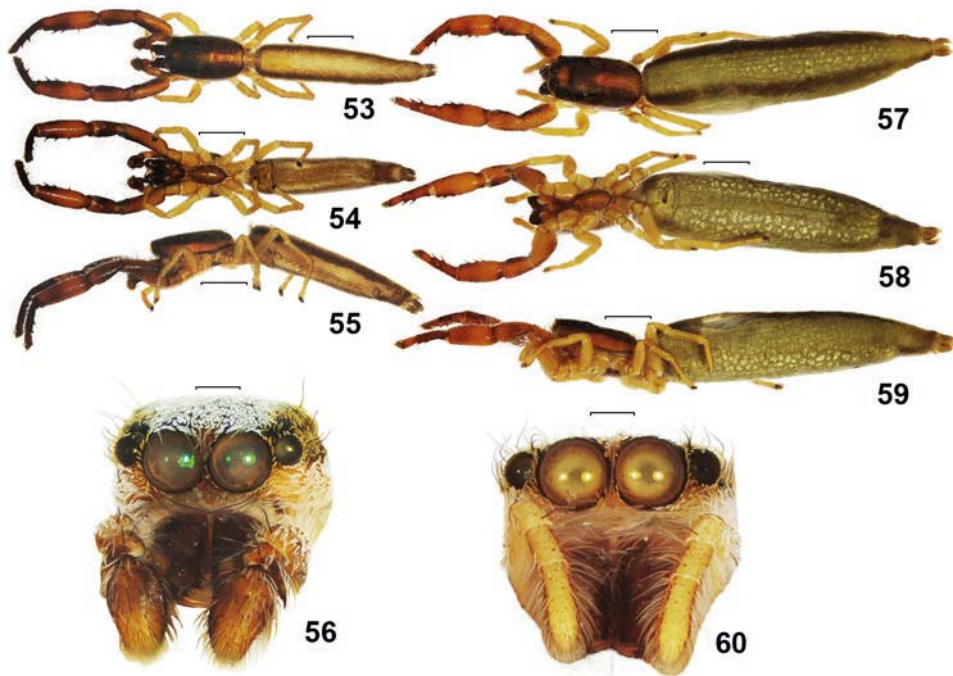


Figs 45–52. *Festucula festuculaeformis* (Lessert, 1925): (45) male palp, ventral view; (46) ditto, retrolateral view; (47) tibial apophysis, dorsal view; (48) ditto, ventro-retrolateral view; (49) ditto, retrolateral-apical view; (50) diagrammatic course of the insemination ducts; (51) epigyne, ventral view; (52) spermathecae, dorsal view. Scale bars: 0.1 mm.

Diagnosis: *F. festuculaeformis* resembles *F. haddadi* sp. n. The male can be distinguished by the shape of its tibial apophysis: VTA is swollen distally (Fig. 48) and the LTA is dorsally concave (Fig. 49, arrowed), compared to the less swollen VTA (Fig. 64) and dorsally straight LTA in *F. haddadi* sp. n. (Fig. 64, arrowed). The embolus sits at c. 45° to the distal margin of the tegulum in *F. festuculaeformis* (Fig. 45), while the angle is much more acute in *F. haddadi* sp. n. The female can be distinguished by the structure of the spermathecae, characterised by the long, thin middle part of the insemination ducts (Fig. 52).

Description:

Male.



Figs 53–60. *Festucula festuculaeformis* (Lessert, 1925), general appearance: (53) male, dorsal view; (54) ditto, ventral view; (55) ditto, lateral view; (56) male “face”; (57) female, dorsal view; (58) ditto, ventral view; (59) ditto, lateral view; (60) female “face”. Scale bars: (53–55, 57–59) 1 mm, (56, 60) 0.2 mm.

Measurements: Carapace: 1.80–2.00 long, 1.20–1.30 wide, 0.50 high. Abdomen: 4.40–4.70 long, 1.15–1.20 wide. Eye field: 0.70–0.80 long, anterior 0.90–1.00 wide, posterior 0.95–1.05 wide. Cheliceral length 0.55–0.60. Clypeal height 0.10. Diameter of AME 0.30. Length of leg segments (male from Kenya, NCA 80/99): I 1.50+1.15+1.70+1.20+0.45; II 0.85+0.40+0.50+0.45+0.35; III 0.70+0.35+0.40+0.35+0.35; IV 1.00+0.50+0.75+0.60+0.35.

Leg spination: I: Tb v 0-1-1-1; Mt v 0-2-2ap. III: Mt v 0-1ap.

Coloration (Figs 53–56): Carapace low, flat, dark brown with median brownish-yellow longitudinal stripe, slightly broader in posterior part of ocular area, with two lateral yellow bands, covered with white adpressed hairs. Ocular area black, with brown-yellow patch behind AME. Clypeus brown, very low, covered with white hairs (Fig. 56). Chelicerae dark brown. Sternum yellow-brown. Abdomen yellowish-grey, with broad brownish stripes laterally (Fig. 54). Dorsum with two longitudinal brown and broad yellow stripes (Fig. 53). Booklungs and spinnerets brownish. Legs I long and robust, brown. The rest of legs yellow. Palps brown. All legs and palps covered with long thin bristles. Palpal structure as in Figs 45–49.

Female.

Measurements: Carapace: 1.90 long, 1.20 wide, 0.50 high. Abdomen: 6.50 long, 1.50 wide. Eye field: 0.70 long, anterior 0.95 wide, posterior 1.00 wide. Cheliceral length

0.50. Clypeal height 0.10. Diameter of AME 0.30. Length of leg segments (female from Kenya, NCA 80/99): I 1.10+0.80+1.10+0.70+0.40; II 0.70+0.40+0.50+0.35+0.30; III 0.70+0.35+0.40+0.40+0.35; IV 1.10+0.45+0.80+0.70+0.40.

Leg spination: I: Tb v 0-1-1-1; Mt v 0-2-2ap. IV: Mt v 0-1ap.

Coloration (Figs 57–60): Coloration as in the male (Figs 57–60). Structure of epigyne and spermathecae as in Figs 50–52.

Type material examined: Holotype ♂ of *Pseudicius festuculaeformis* Kibonoto [=TANZANIA, Kilimanjaro, Kibongoto, c. 03°11'S 37°06'E, date unknown (R. de Lessert)] (MHNG).

Other material examined: KENYA: 3♂ 1♀ Nairobi, L. Nakuru, c. 00°19'S 36°04'E, dead grass *Chloris gayana*, 19.xii.1979, P. Reavell (NCA 80/99). TANZANIA: 1♂ 1♀ Mkomazi G.R., Ibaya camp, sweeping, dry grass, 04°00'S 38°00'E, ii.1994, A. Russell-Smith (MRAC 208025); 1♂ 1♀ same locality, dry grass on hillside, 03°58'S 37°46'E, 20.xi.1994, A. Russell-Smith (MRAC 215585).

Distribution: Eastern Africa (Kenya, Tanzania) (Fig. 26).

***Festucula haddadi* sp. n.**

Figs 17, 24, 61–76

Festucula lawrencei: Wesolowska & Haddad 2009: 35, figs 50–52 (misidentified).

Etymology: This species is named after Dr. Charles Haddad, South African arachnologist and chairman of the African Arachnological Society, who collected some of the paratypes.

Diagnosis: *F. haddadi* sp. n. resembles *F. festuculaeformis*. The male can be distinguished by the shape of tibial apophysis, with its broad VTA, almost without any swelling distally (Fig. 65) and with a dorsally straight LTA (Fig. 64), instead of the more swollen distal part of the VTA (Fig. 48) and dorsally concave LTA in *F. festuculaeformis* (Fig. 49). The female can be distinguished by the structure of spermathecae, with the short, broad middle part of the insemination ducts (Fig. 68).

Description:

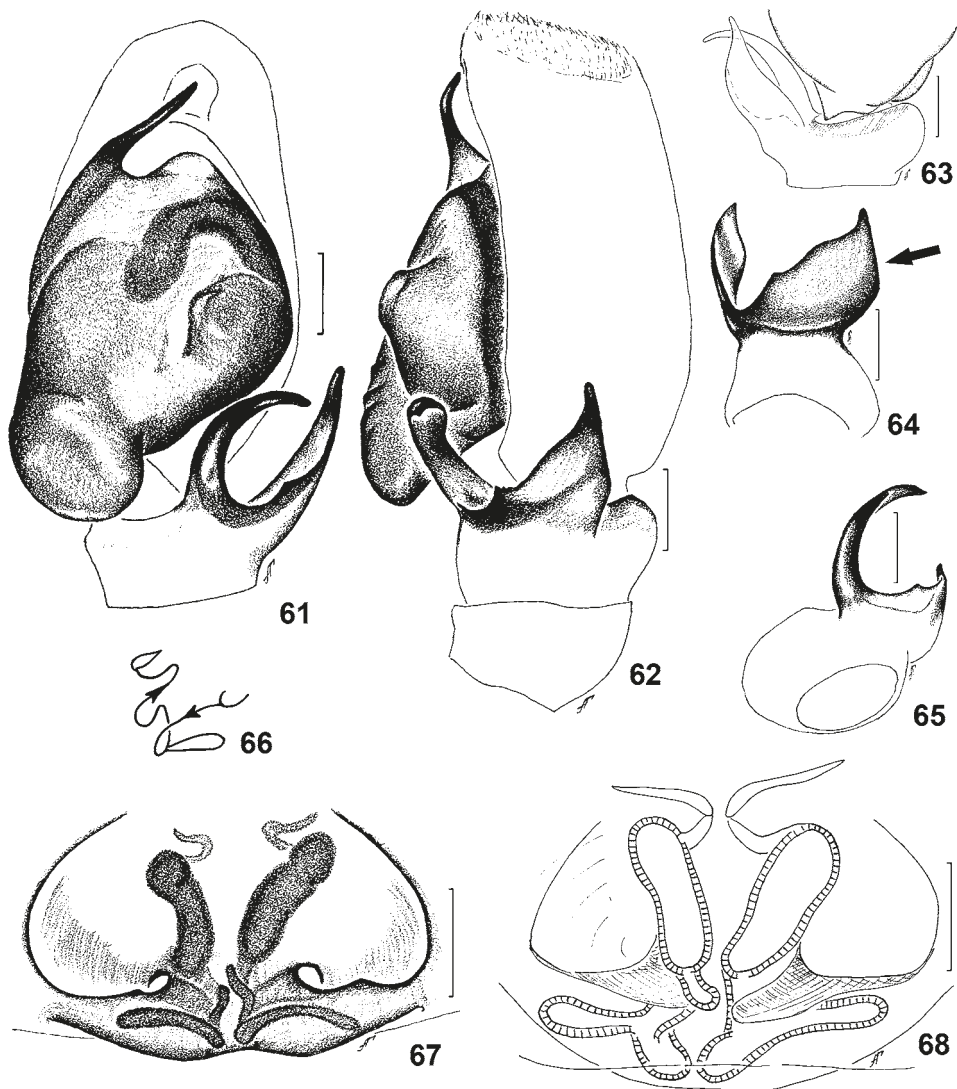
Male.

Measurements: Carapace: 1.80 long, 1.20 wide, 0.55 high. Abdomen: 4.20 long, 1.10 wide. Eye field: 0.80 long, anterior 1.00 wide, posterior 1.05 wide. Cheliceral length 0.60. Clypeal height 0.10. Diameter of AME 0.30. Length of leg segments (holotype): I 1.60+1.30+2.00+1.20+0.50; II 0.90+0.45+0.55+0.40+0.30; III 0.75+0.40+0.45+0.50+0.40; IV 1.10+0.50+0.90+0.70+0.40.

Leg spination: I: Tb v 0-1-1-1-0; Mt v 0-2-2ap. II: Mt v 1-2ap. III: Mt v 0-1ap. IV: Mt v 0-1ap.

Coloration (Figs 69–72): Carapace low, flat, dark brown with median brownish-yellow longitudinal stripe, slightly broader in posterior part of ocular area, with two lateral yellow bands, covered with white adpressed hairs. Ocular area black, with brown-yellow patch behind AME. Clypeus brown, very low, covered with white hairs (Fig. 72). Chelicerae dark brown. Sternum yellow-brown. Abdomen yellowish-grey, with lateral brownish longitudinal stripes dorsally and median brown stripe ventrally (Figs 69–71). Booklungs yellow. Spinnerets yellow-brown. Legs I long and robust, brown, the rest of the legs yellow. Palps brown. All legs and palps covered with long thin bristles. Palpal structure as in Figs 61–65.

Female.



Figs 61–68. *Festucula haddadi* sp. n.: (61) male palp, ventral view; (62) ditto, retrolateral view; (63) tibial apophysis, dorsal view; (64) ditto, ventro-retrolateral view; (65) ditto, retrolateral-apical view; (66) diagrammatic course of the insemination ducts; (67) epigyne, ventral view; (68) spermathecae, dorsal view. Scale bars: 0.1 mm.

Measurements: Carapace: 1.80–2.05 long, 1.00–1.20 wide, 0.50–0.60 high. Abdomen: 4.60–5.30 long, 1.10–1.20 wide. Eye field: 0.75–0.85 long, anterior 0.90–1.00 wide, posterior 0.95–1.05 wide. Cheliceral length 0.40–0.50. Clypeal height 0.10. Diameter of AME 0.35. Length of leg segments (female from KwaZulu-Natal, ISEA 000.851): I 1.10+0.85+1.00+0.70+0.40; II 0.80+0.40+0.50+0.45+0.35; III 0.70+0.35+0.40+0.50+0.40; IV 1.10+0.50+0.75+0.75+0.40.

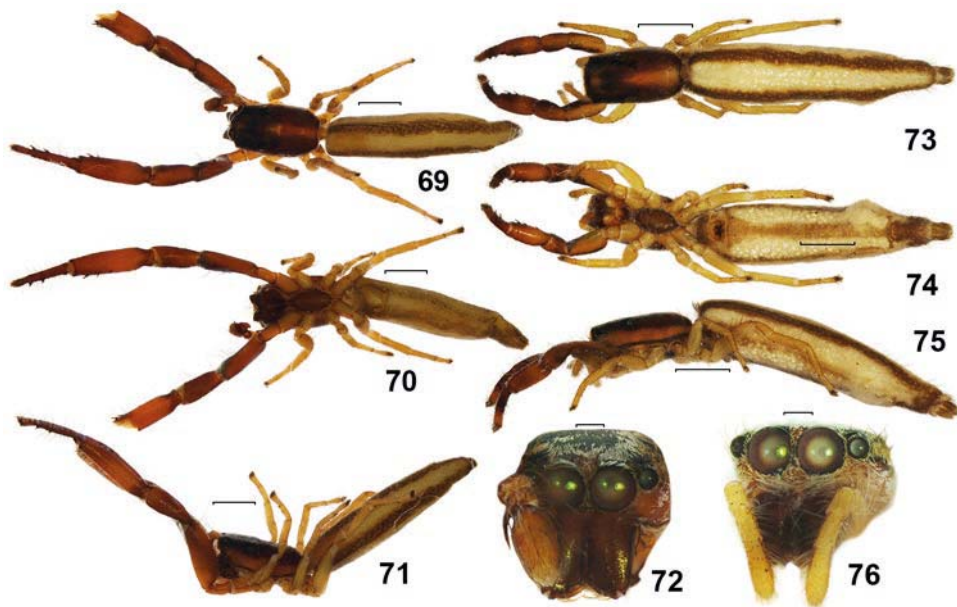
Leg spination: I: Tb v 0-1-1-1-0 or 1-0-1-1-0; Mt v 0-2-2ap. III: Mt v 0-1ap.

Coloration (Figs 73–76): Coloration same as in the male (Figs 73–76). Structure of epigyne and spermathecae as in Figs 66–68.

Holotype ♂ SOUTH AFRICA: *KwaZulu-Natal*: Ndumo G.R., c. 26°52'S 32°15'E, dense grass, 14.i.1980, P. Reavell (NCA 81/54).

Paratypes: SOUTH AFRICA: *Mpumalanga*: 1♂ c. 35 km SE of Sabie, White River, 25°07'S 31°55'E, beating, 31.viii.1991, E. Visagie (NMBA 5433); 1♂ Nelspruit (caravan park), 25°20'S 31°46'E, sweeping, mixed grass, 19.i.1977, L. Burger (NCA 77/287). *KwaZulu-Natal*: 1♀ Ndumo G.R., 26°54'S 32°18'E, sweeping, grass, broadleaf woodland, 13.vi.2005, C. Haddad (NCA 2008/2037); 2♀ Tembe Elephant Park, 27°01'S 32°25'E, beating short shrubs, open woodland, 10.i.2002, C. Haddad (ISEA 000.851); 1♂ Kosi Bay, c. 26°54'S 32°52'E, coastal bush, 6.x.1977, P. Reavell (NCA 98/734); 1♀ Pongola, c. 27°23'S 31°37'E, sweeping, grass, 5.iv.1977, A.S. Dippenaar-Schoeman (NCA 98/644); 1♀ Ulundi, Ophathe G.R., Ophathe R., 28°24'S 31°23'E, sweeping, grass on R. bed, 2.x.2008, C. Haddad (NCA 2008/4185); 1♀ Umgeni Valley, c. 27°28'S 30°16'E, sweeping, grass, LR 1661, 4.i.1997, A. Leroy (NCA 98/274); 2♂ Ntumeni, Ngoje Forest, 28°52'S 31°22'E, herb layer, 1.xii.1977, P. Reavell (ISEA 000.852); 1♂ Mtubatuba, Dukuduku Forest Reserve, St. Lucia, c. 28°21'S 32°18'E, grassland, sweeping, AR038, 2.iv.2009, J. Pryke (NCA 2010/5782); 1♂ Charter's Bay, Charter's Creek Camp, c. 28°12'S 32°24'E, sweeping, grass, 2.iii.2007, P. van Niekerk (NCA 2007/2394); 1♂ Empangeni, c. 28°45'S 31°54'E, sweeping, grass, 12.iii.1981, P. Reavell (NCA 98/742); 1♂ same locality, KwaDlangezwa, University of Zululand, 28°51'S 31°49'E, active search, on bush, 8.iii.1977, P. Reavell (NCA 84/646); 1♀ same locality, 28°51'S 31°49'E, grassland, 20.xi.1980, P. Reavell (NCA 81/92); 1♀ same locality, Nyala Game Ranch, 28°43'S 31°52'E, sweeping, grass, 16.xi.1980, P. Reavell (NCA 81/69); 1♀ same locality, 28°51'S 31°49'E, sweeping on grass, 17.ii.1981, P. Reavell (NCA 81/203); 1♂ Richards Bay, c. 28°46'S 32°06'E, active search, 10.iv.1980, P. Reavell (NCA 81/664); 1♀ Richards Bay, c. 28°46'S 32°06'E, sweeping, 1.xii.1995, T. Wassenaar (NCA 2007/2541); 1♀ Vlei, nr Charter's Creek, nr St. Lucia, c. 28°12'S 32°26'E, 18.i.1980, Collector unknown (NMSA); 1♂ iSimangaliso Wetland Park, St. Lucia National Park, Charter's Creek Camp, 28°12'S 32°24'E, sweeping, grass, 2.iii.2007, P. & G. van Niekerk, X. Combrink, J. Warner (NCA 2010/3350).

Distribution: Eastern part of South Africa (Fig. 26).



Figs 69–76. *Festucula haddadi* sp. n., general appearance: (69) male, dorsal view; (70) ditto, ventral view; (71) ditto, lateral view; (72) male “face”; (73) female, dorsal view; (74) ditto, ventral view; (75) ditto, lateral view; (76) female “face”. Scale bars: (69–71, 73–75) 1 mm, (72, 76) 0.2 mm.

Festucula lawrencei Lessert, 1933

Figs 15, 77–87

Festucula lawrencei Lessert, 1933: 152, fig. 72 (♂, examined).*F. lawrencei*: Wesolowska 1992: 50, figs 26–27.

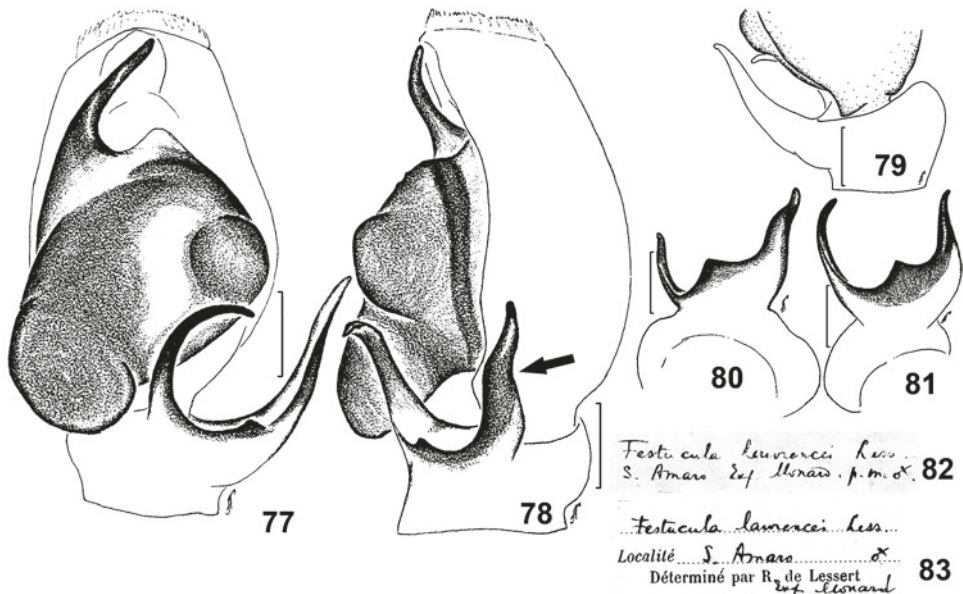
Diagnosis: *F. lawrencei* resembles *F. leroyae* sp. n. Both species have a relatively thin VTA, but the LTA of *F. lawrencei* is concave (Fig. 78, arrowed) compared to the dorsally straight LTA of *F. leroyae* sp. n. (Figs 89, 92). *F. lawrencei* is also distinguished from *F. leroyae* sp. n. and *F. robustus* sp. n. by the yellow longitudinal median stripe on the dorsum (Fig. 84).

Description:*Male.*

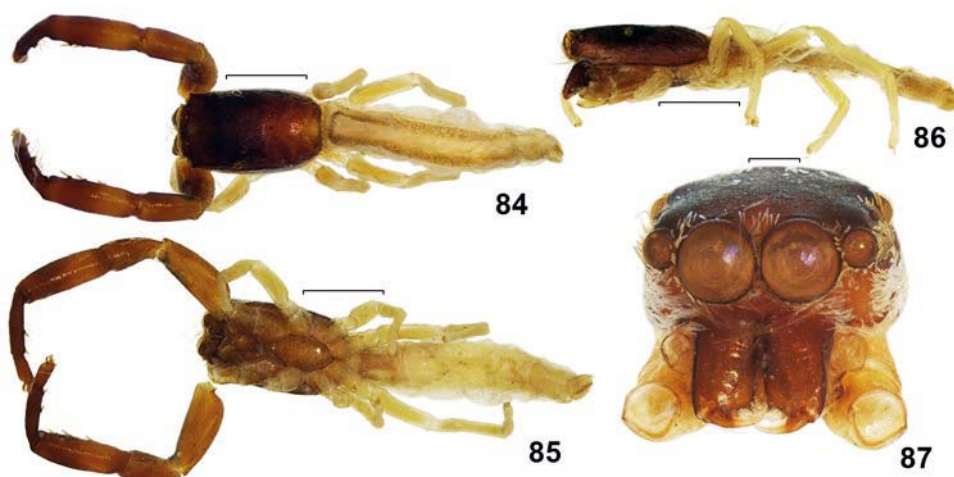
Measurements: Carapace: 1.80 long, 1.10 wide, 0.50 high. Abdomen: 2.80 long, 0.70 wide. Eye field: 0.70 long, anterior 0.90 wide, posterior 0.95 wide. Cheliceral length 0.40. Clypeal height 0.05. Diameter of AME 0.30. Length of leg segments (holotype): I 1.10+0.80+1.20+0.80+0.40; II 0.75+0.35+0.40+0.30+0.25; III 0.65+0.35+0.40+0.45+0.35; IV 1.00+0.50+0.65+0.60+0.40.

Leg spination: I: Tb v 0-1-1-1; Mt v 0-2-2ap.

Coloration (Figs 84–87): Carapace low, flat, brown with median yellow bands, laterally with two longitudinal light-brown bands covered with white adpressed hairs. Clypeus brown, very low, covered with white hairs (Fig. 87). Chelicerae brown. Clypeus and sternum yellow-brown. Abdomen yellow (Fig. 85), dorsum with two longitudinal brown stripes (Fig. 84). Booklungs and spinnerets yellow. Legs I long and robust, brown. Other



Figs 77–83. *Festucula lawrencei* Lessert, 1933: (77) male palp, ventral view; (78) ditto, retrolateral view; (79) tibial apophysis, dorsal view; (80) ditto, ventro-retrolateral view; (81) ditto, retrolateral-apical view; (82, 83) labels of type specimen. Scale bars: 0.1 mm.



Figs 84–87. *Festucula lawrencei* Lessert, 1933, general appearance: (84) male, dorsal view; (85) ditto, ventral view; (86) ditto, lateral view; (87) male “face”. Scale bars: (84–86) 1 mm, (87) 0.2 mm.

legs yellow. Palps brown-yellow. All legs and palps covered with long thin bristles. Palpal structure as in Figs 77–81.

Female unknown.

Material examined: Holotype ♂ ANGOLA, Santo Amaro, 12°43'S 15°52'E, date unknown (A. Monard) (MRAC 12022; 12023, only left palp belongs to specimen #12022).

Distribution: Known only from the type locality in Angola (Fig. 26).

Comments: We studied both types of *F. lawrencei* from MRAC (Figs 82–83). Sample #12022 has no left palp, while vial #12023 only contains a left palp. We therefore assume that the parts found in vials ## 12022 and 12023 belong to one exemplar, the holotype of *F. lawrencei*.

***Festucula leroyae* sp. n.**

Figs 8–9, 19, 88–103

Festucula lawrencei: Haddad & Wesolowska 2011: 70, fig. 40 (misidentified).

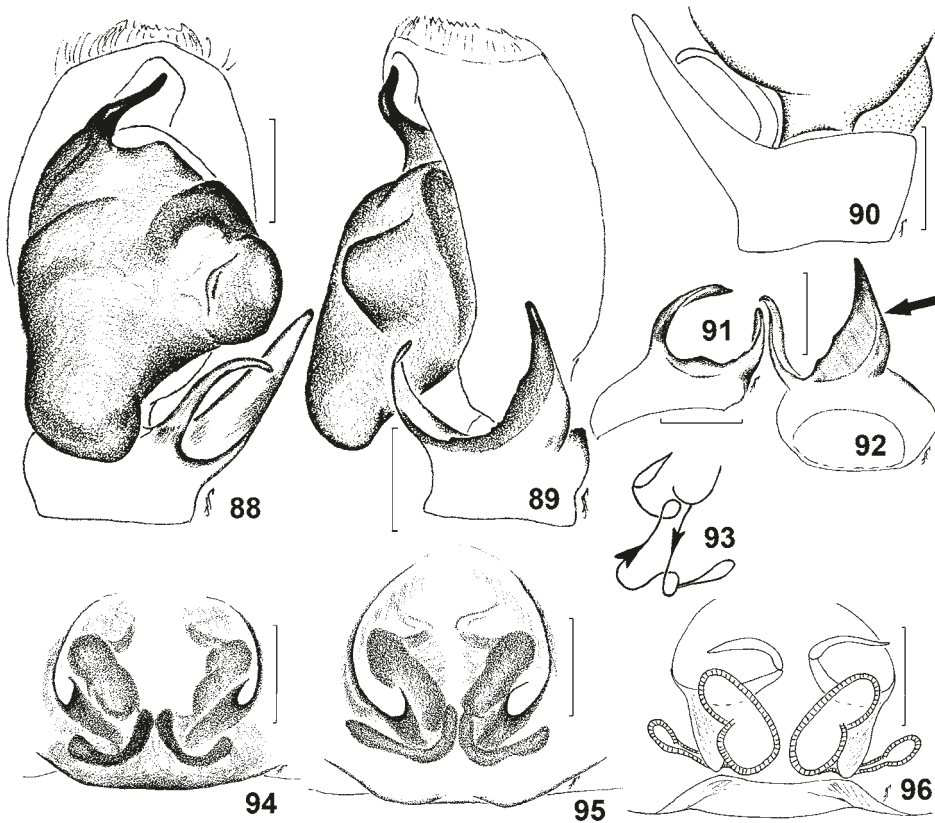
Etymology: This species is named after Astri Leroy, the chairperson of the non-profit organisation “The Spider Club of Southern Africa” and veteran spider collector.

Diagnosis: This species resembles *F. robustus* sp. n. in body coloration and the structure of the epigyne and spermathecae (Figs 94–96 and Figs 118–119). The female differs in the relatively short and compact spermathecal ducts (Fig. 96). The male palp is close to that of *F. lawrencei*, but differs in the shape of ventral tibial apophyses—LTA dorsally straight and relatively broad (Figs 89, 92). See also comments under the ‘Diagnosis’ of *F. lawrencei*.

Description:

Male.

Measurements: Carapace: 1.40–2.00 long, 0.90–1.10 wide, 0.35–0.40 high. Abdomen: 3.30–5.00 long, 0.80–1.10 wide. Eye field: 0.60–0.75 long, anterior 0.70–



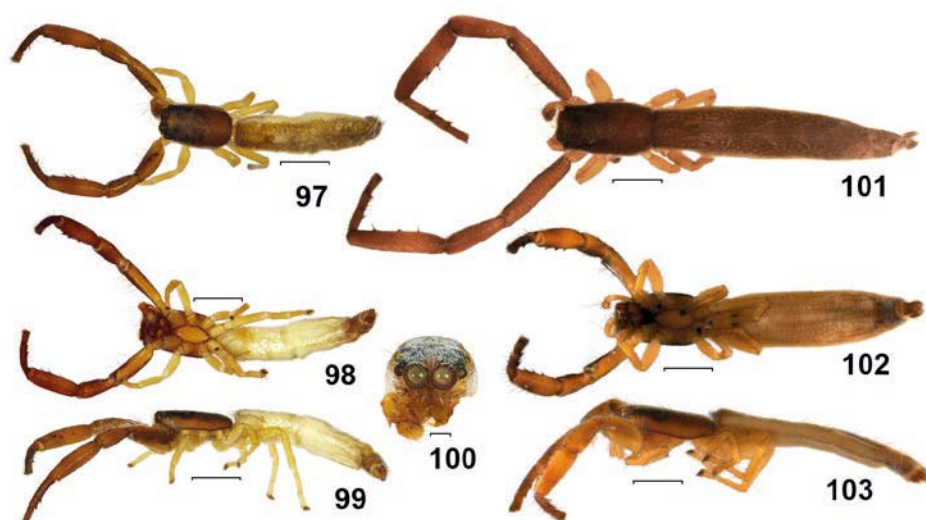
Figs 88–96. *Festucula leroyae* sp. n.: (88) male palp, ventral view; (89) ditto, retrolateral view; (90) tibial apophysis, dorsal view; (91) ditto, ventro-retrolateral view; (92) ditto, retrolateral-apical view; (93) diagrammatic course of the insemination ducts; (94, 95) epigyne, ventral view; (96) spermathecae, dorsal view. (88–92) Oranjeville, Free State; (95) near Lanseria, Gauteng; (94, 96) Pretoria/Tshwane, Gauteng. Scale bars: 0.1 mm.

0.85 wide, posterior 0.75–0.95 wide. Cheliceral length 0.30–0.50. Clypeal height 0.05. Diameter of AME 0.20–0.30. Length of leg segments (paratype, large male, NCA 82/746): I 2.20+1.50+2.50+1.40+0.45; II 0.80+0.40+0.40+0.35+0.35; III 0.70+0.35+0.50+0.40+0.40; IV 1.00+0.50+0.70+0.65+0.40.

Leg spination: I: Tb v 0-1-1-1-0; Mt v 0-2-2ap. III: Mt v 0-1ap. IV: Mt v 0-1ap.

Coloration (Figs 97–100): Carapace low, flat, brown with two lateral yellow bands, covered with white adpressed hairs, with dark-brown ocular area. Ocular area with thin brown longitudinal stripe and yellow patch behind AME. Clypeus brown, very low, covered with white hairs (Fig. 100). Chelicerae yellow-brown. Sternum yellow. Abdomen grey-yellow, ventrally with caudal part (approx. $\frac{1}{8}$) brown (Figs 98–99). Dorsum with broad longitudinal brown band (Fig. 97). Booklungs yellow. Spinnerets brown. Legs I long and robust, brown. The rest of legs yellow. Palps brown-yellow. All legs and palps covered with long thin bristles. Palpal structure as in Figs 88–92.

Female.



Figs 97–103. *Festucula leroyae* sp. n., general appearance: (97) male, dorsal view; (98) ditto, ventral view; (99) ditto, lateral view; (100) male “face”; (101) female, dorsal view; (102) ditto, ventral view; (103) ditto, lateral view. Scale bars: (97–99, 101–103) 1 mm, (100) 0.2 mm.

Measurements: Carapace: 1.80–2.10 long, 1.10–1.20 wide, 0.50–0.60 high. Abdomen: 3.50–7.10 long, 0.90–1.40 wide. Eye field: 0.75–0.90 long, anterior 0.85–1.00 wide, posterior 0.90–1.05 wide. Chelicer length 0.30–0.55. Clypeal height 0.05–0.10. Diameter of AME 0.30–0.40. Length of leg segments (paratype, NCA 2010/3960): I 1.50+1.00+1.50+0.90+0.40; II 0.85+0.40+0.50+0.35+0.30; III 0.70+0.25+0.45+0.50+0.40; IV 1.05+0.40+0.75+0.60+0.40.

Leg spination: I: Tb v 0-1-1-1-0 or 0-1-2-1-0; Mt v 0-2-2ap. III: Mt v 0-0 or 0-1ap.

Coloration (Figs 101–103): Carapace low, brown, with black eye field, with small dark patch behind AME and two lateral yellow bands covered with white adpressed hairs. Clypeus very low, brown, covered with white hairs. Chelicerae brown. Sternum brownish-yellow. Abdomen grey-yellow, ventrally caudal part (approx. $\frac{1}{8}$) brown (Figs 102–103). Dorsum with broad brown longitudinal band (Fig. 101). Booklungs yellow. Spinnerets brown. Legs I long and robust, yellow-brown. Femora I yellow ventrally, yellow-brown dorsally, dark brown pro- and retrolaterally. Tibiae I dark brown distally. Metatarsi and tarsi dark brown. The rest of legs and palps yellow. All legs and palps covered with long thin bristles. Structure of epigyne and spermathecae as in Figs 93–96.

Holotype ♂ SOUTH AFRICA: *Gauteng*: Pretoria/Tshwane, Roodeplaatdam Nat. Res., c. 25°37'S 28°21'E, sweeping, grass, 25.v.1982, T. Marren, I. van Rooyen (NCA 83/180).

Paratypes: BOTSWANA: 1♂ Okavango Delta, Pom Pom camp, c. 19°22'S 22°40'E, dry flood plain, Tsetse trials, sweeping, 17.viii.2001, E. Kassimatis (NCA 2002/453); 2♀ same locality, sweeping, 1.vii.2001, E. Kassimatis (NCA 2009/5697); 1♂ 1♀ same locality, sweeping, 1.vii.2001, E. Kassimatis (NCA 2009/5698); ♂ same locality, control mopane, sweeping, 20.viii.2001, M. Dangerfield (NCA 2002/581). SOUTH AFRICA: *North West*: 1♂ Rustenburg, Rustenburg Nat. Res., sweeping, grass, 25°43'S 27°10'E, 19.i.1983, A. van den Berg (NCA 84/397); 1♀ North West, Buffelspoort, sweeping, grass, c. 25°48'S 27°29'E, 15.x.1975, A.S. Dippenaar-Schoeman (NCA 97/762). *Limpopo*: 1♀ Nylsvley, Naboomspruit, c. 24°39'S 28°42'E, 10.xii.1977, G. Ferreira (NCA 78/427). *Free State*: 1♂ Oranjeville, c. 26°59'S 28°12'E, sweeping, grass, 28.xii.1982, A.S. Dippenaar-Schoeman (NCA 84/47); 1♀ same locality, sweeping, grass, 22.iii.1980, A.S. Dippenaar-Schoeman, N.J. Dippenaar (NCA 81/340); 2♀ Free State, Koppies, Koppiesdam Nat. Res.,

1400 m, 27°13'S 27°42'E, various methods, 27-28.ix.1993, L.N. Lotz (NMBA 6242). *Gauteng*: 1♂ Pretoria/Tshwane, Rooopleatdam Nat. Res., c. 25°37'S 28°21'E, sweeping, tall grass, 17.vi.1983, A. van den Berg, T. Marren (NCA 84/202); 9♂ 6♀ same locality, sweeping, grass, 23.ii.1983, A. van den Berg, T. Marren (ISEA 000.853); 5♂ 5♀ same locality, sweeping, grass, 25.i.1983, A. van den Berg, T. Marren (NCA 84/161); 2♂ 4♀ same locality, sweeping, grass, 2.xii.1982, A. van den Berg, T. Marren (NCA 84/92); 2♀ same locality, sweeping, grass, 28.iv.1983, A. van den Berg, T. Marren (NCA 84/192); 3♂ 3♀ same locality, sweeping, grass, 15.i.1980, A.S. Dippenaar-Schoeman (NCA 82/635); 4♂ 3♀ same locality, sweeping, grass, 31.i.1980, A.S. Dippenaar-Schoeman (NCA 82/677); 1♀ same locality, sweeping, grass, 19.iii.1980, A.S. Dippenaar-Schoeman (NCA 82/662); 5♂ 11♀ same locality, sweeping, grass, 17.xii.1981, A.S. Dippenaar-Schoeman (NCA 81/1078); 2♂ 2♀ same locality, sweeping, grass, 5.xi.1981, A.S. Dippenaar-Schoeman (NCA 82/461); 1♂ 2♀ same locality, sweeping, grass, 5.xi.1981, A.S. Dippenaar-Schoeman (NCA 82/445); 2♀ same locality, sweeping, grass, 5.xi.1981, A.S. Dippenaar-Schoeman (NCA 82/471); 3♂ 1♀ same locality, sweeping, grass, 5.xi.1981, A.S. Dippenaar-Schoeman (NCA 82/479); 1♂ 5♀ same locality, sweeping, grass, 17.xii.1981, A.S. Dippenaar-Schoeman (NCA 82/504); 1♂ 5♀ same locality, sweeping, grass, 17.xii.1981, A.S. Dippenaar-Schoeman (NCA 82/509, 1♀ with ugly epigyne); 1♀ same locality, sweeping, grass, 17.xii.1981, A.S. Dippenaar-Schoeman (NCA 82/529); 3♂ 4♀ same locality, sweeping, grass, 17.xii.1981, A.S. Dippenaar-Schoeman (NCA 82/513); 1♂ 8♀ same locality, sweeping, grass, 17.xii.1981, A.S. Dippenaar-Schoeman (NCA 82/521); 3♂ 3♀ same locality, sweeping, grass, 9.ii.1982, A.S. Dippenaar-Schoeman (NCA 82/746); 8♂ 4♀ same locality, sweeping, tall grass, 25.x.1982, A. van den Berg, I. van Rooyen (NCA 84/104); 4♂ 4♀ same locality, sweeping, grass, 9.iii.1982, T. Marren, I. van Rooyen (NCA 83/20); 1♂ 3♀ same locality, sweeping, grass, 25.v.1982, T. Marren, I. van Rooyen (NCA 83/180, together with Holotype); 1♀ same locality, sweeping, grass, 24.vii.1982, T. Marren, I. van Rooyen (NCA 84/112); 1♂ 2♀ same locality, sweeping, grass, 14.xii.1982, A. van den Berg (NCA 84/151); 1♀ same locality, sweeping, grass, 10.i.1990, A. van den Berg (NCA 90/504); 2♂ 4♀ same locality, sweeping, 21.iv.1980, M. Stiller (NCA 82/659); 1♀ same locality, sweeping, 14.v.1980, M. Stiller (NCA 82/618); 1♀ same locality, sweeping, 26.vi.1980, M. Stiller (NCA 82/630); 1♀ same locality, sweeping, 16.viii.1980, M. Stiller (NCA 82/640); 1♀ same locality, sweeping, 26.ix.1980, M. Stiller (NCA 82/568); 2♂ 2♀ same locality, sweeping, 22.x.1980, M. Stiller (NCA 82/574); 3♂ 8♀ same locality, sweeping, 13.xi.1980, M. Stiller (NCA 82/581); 1♂ 4♀ same locality, sweeping, 9.xii.1980, M. Stiller (NCA 82/595); 2♂ 1♀ same locality, sweeping, 13.xii.1980, M. Stiller (NCA 82/644); 3♂ 8♀ same locality, sweeping, 29.i.1981, M. Stiller (NCA 82/551); 1♂ 1♀ same locality, sweeping, 20.ii.1981, M. Stiller (NCA 82/546); 1♂ same locality, sweeping, 22.vii.1981, M. Stiller (NCA 82/697); 2♀ same locality, sweeping, 28.viii.1981, M. Stiller (NCA 82/700); 3♂ 7♀ same locality, sweeping, 16.ix.1981, M. Stiller (NCA 82/708); 1♂ same locality, sweeping, 13.x.1981, M. Stiller (NCA 82/425); 6♂ 4♀ same locality, sweeping, beating, 28.xi.1979, A.S. Dippenaar-Schoeman, M. Stiller (NCA 81/762); 3♂ 6♀ same locality, sweeping, grass, 25.v.1982, T. Marren, I. van Rooyen (NCA 83/180); 1♂ same locality, sweeping, tall grass, 25.v.1983, A. van den Berg (NCA 84/196); 3♀ same locality, grass and bush, sweepnetting, 17.x.1983, A. van den Berg, C. Schultz (NCA 2013/639); 1♂ same locality, 20.vi.1997, H. Oberholzer (NCA 97/1024); 1♀ Jukskei R., near Lanseria, c. 25°55'S 27°54'E, grass, 4.v.1980, A. Leroy (NCA 81/276); 1♀ Baviaanspoort, c. 25°40'S 28°22'E, LR 494, grass, 16.iv.1989, A. Leroy (NCA 89/687). *Mpumalanga*: 2♀ Ezemvelo G.R., 26 km NE of Bronkhorstspuit, LR 2254, 25°41'S 28°58'E, grass, sweep net, 11.xi.2000, A. Leroy (NCA 2010/3952); 3♀ 30 km N of Graskop, 24°37'S 30°50'E, grass, sweeping, 15.iii.2004, S. Maartens (NCA 2005/410).

Distribution: Southern Africa (Botswana and South Africa) (Fig. 26).

Festucula lineata Simon, 1901 (*sensu* Fage 1923)

Figs 104–112

Festucula lineata Simon, 1901a: 155 (♀, not examined).

F. lineata: Fage 1923: 299, fig. 1.

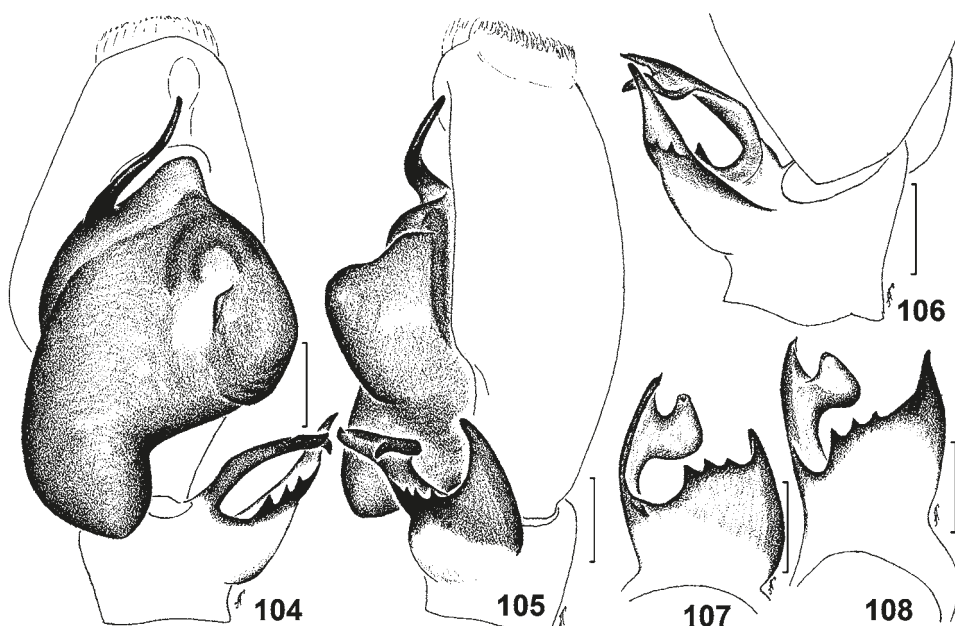
F. festuculaeformis: Wesołowska & Edwards 2012: 746, figs 44–45 (misidentified).

Diagnosis: The male of this species resembles that of *F. australis*, but differs from it and other congeners by the bifurcated apical part of the VTA (Figs 106–108).

Description:

Male.

Measurements: Carapace: 1.90 long, 1.30 wide, 0.55 high. Abdomen: 3.20 long, 0.95 wide. Eye field: 0.80 long, anterior 1.00 wide, posterior 1.10 wide. Cheliceral length 0.60. Clypeal height 0.05. Diameter of AME 0.35. Length of leg segments:



Figs 104–108. *Festucula lineata* Simon, 1901 (*sensu* Fage, 1923): (104) male palp, ventral view; (105) ditto, retrolateral view; (106) tibial apophysis, dorsal view; (107) ditto, ventro-retrolateral view; (108) ditto, retrolateral-apical view. Scale bars: 0.1 mm.

I 1.40+1.00+1.35+1.00+0.40; II 0.90+0.50+0.55+0.45+0.35; III 0.75+0.30+0.50+0.60+0.40; IV 1.20+0.60+0.90+0.80+0.50.

Leg spination: I: Tb v 0-1-1-1; Mt v 0-2-2ap. II: Mt v 1-2ap. III: Mt v 0-1ap. IV: Mt v 0-1ap.

Coloration (Figs 109–112): Carapace low, flat, dark brown with median and two lateral yellow bands, covered with white adpressed hairs. Clypeus brown, very low, covered with white hairs (Fig. 112). Chelicerae dark brown. Sternum brown. Abdomen yellow-brown (Fig. 110), dorsum with two longitudinal brown stripes (Fig. 109). Booklungs and spinnerets brown. Legs I long and robust, brown. The rest of legs yellow. All legs and palps covered with long thin bristles. Palps yellow-brown. Palpal structure as in Figs 104–108.

Female: Not examined. See Wesolowska and Edwards (2012) for description.

Material examined: IVORY COAST: 1♂ Bouaké, WARDA H.Q., 07°41'N 05°02'E, swept, upland rice, 7.x.1995, A. Russell-Smith (MRAC 225321).

Distribution: Western Africa from Senegal to Nigeria (Fig. 26).

Comments: *F. lineata* was described by Simon (1901a) based on a single female from Dakar, Senegal. Later, Fage (1923) described the male from Guinea. Wesolowska (1992) treated this species name as *nomen dubium*, pointing out that 'In the MNHN collection there are only two immature specimens. The brief and cursory original description is inadequate for certain identification of this species. Similarly the drawing of the syntype's epigyne in Lessert (1933) is too schematic to be helpful in the species identification,



Figs 109–112. *Festucula lawrencei* Lessert, 1933, general appearance: (109) male, dorsal view; (110) ditto, ventral view; (111) ditto, lateral view; (112) male “face”. Scale bars: (109–111) 1 mm, (112) 0.2 mm.

and the syntype forming the base of this drawing has been lost’. In 2012, Wesolowska and Edwards illustrated and identified a female from Nigeria as *F. festuculaeformis*. The male from Ivory Coast examined in the present study is identical to that illustrated by Fage (1923) (cf. Fig. 1). Given that *F. festuculaeformis* is restricted to eastern Africa and replaced by *F. australis* in the western part of southern Africa, it is very likely that the female identified by Wesolowska and Edwards (2012) as *F. festuculaeformis* was a misidentification. However, it differs from the female of *F. australis*. Therefore, we have concluded that the aforementioned female from Nigeria (Wesolowska & Edwards, 2012: sub *F. festuculaeformis*) should belong to *F. lineata*.

***Festucula robustus* sp. n.**

Figs 113–128

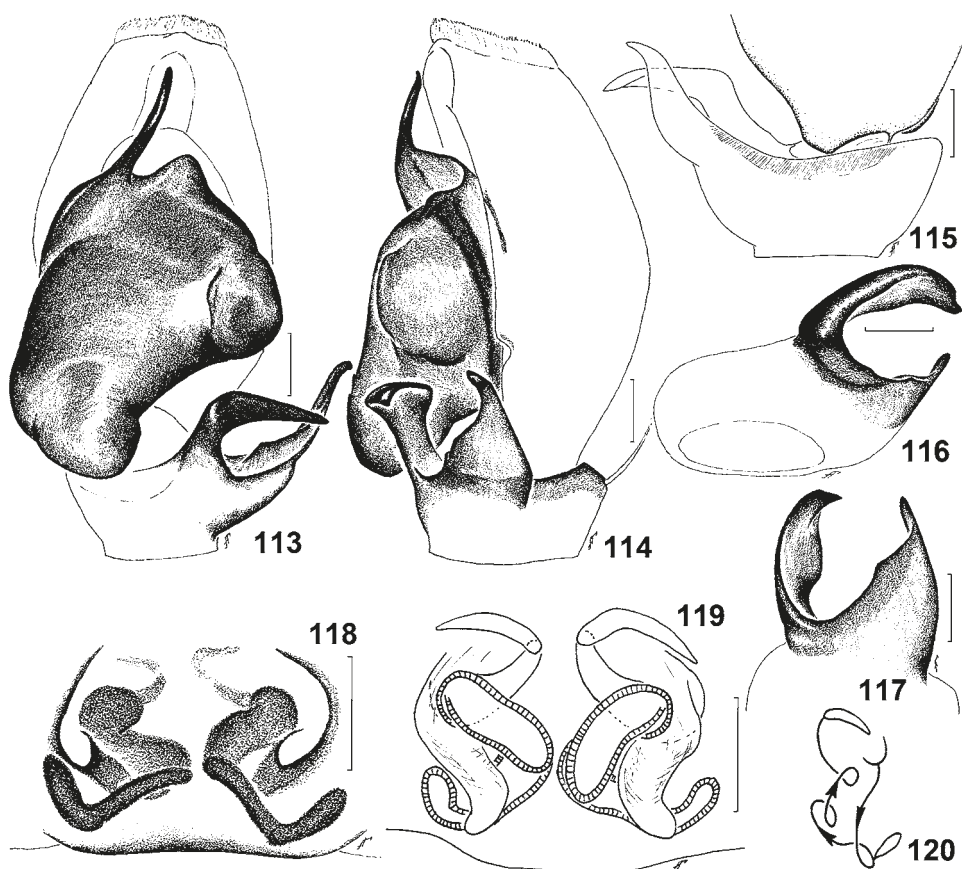
Etymology: The specific name is derived from the Latin *robustus* (massive, strong). Compared to other *Festucula* species, *F. robustus* sp. n. is large in body size.

Diagnosis: This species resembles *F. leroyae* sp. n. The male differs in the shape of the ventral tibial apophysis—broad and bent laterally at 90° (Fig. 113). The female differs in the longer and less compact spermathecal ducts (Fig. 119).

Description:

Male.

Measurements: Carapace: 2.20 long, 1.60 wide, 0.70 high. Abdomen: 3.90 long, 1.30 wide. Eye field: 0.90 long, anterior 1.15 wide, posterior 1.20 wide. Cheliceral length 0.70. Clypeal height 0.10. Diameter of AME 0.40. Length of leg segments (holotype): I 1.90+1.50+2.20+1.50+0.60; II 1.00+0.50+0.80+0.65+0.35; III 1.00+0.50+0.65+0.70+0.45; IV 1.40+0.60+1.20+1.00+0.50.



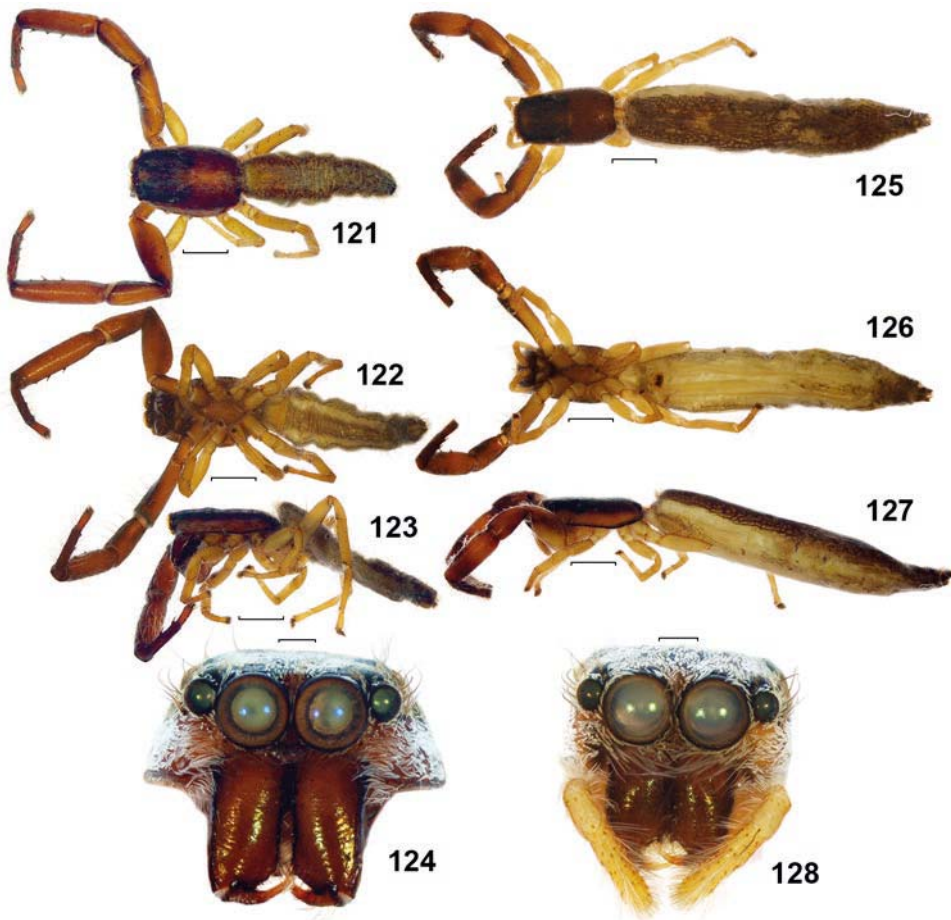
Figs 113–120. *Festucula robustus* sp. n.: (113) male palp, ventral view; (114) ditto, retrolateral view; (115) tibial apophysis, dorsal view; (116) ditto, ventro-retrolateral view; (117) ditto, retrolateral-apical view; (118) epigyne, ventral view; (119) spermathecae, dorsal view; (120) diagrammatic course of the insemination ducts. Scale bars: 0.1 mm.

Leg spination: I: Tb v 0-1-1-1-0; Mt v 0-2-2ap. II: Mt v 2-2ap. III: Mt v 0-1ap. IV: Mt v 0-1ap.

Coloration (Figs 121–124): Carapace low, dark brown, with black eye field, narrow median light-brown stripe and small patch behind AME, with two lateral yellow bands covered with white adpressed hairs. Clypeus very low, brown, covered with white hairs (Fig. 124). Chelicerae dark brown. Sternum brown. Abdomen yellow-grey, with ventral medial brown stripe, ventrally, caudal part (approx. $\frac{1}{8}$) brown (Fig. 122–123). Dorsum with broad brown longitudinal band (Fig. 121). Booklungs yellow. Spinnerets brownish-yellow. Legs I long and robust, brown. The rest of legs brownish-yellow. Palps brown. All legs and palps covered with long thin bristles. Palpal structure as in Figs 113–117.

Female.

Measurements: Carapace: 2.10 long, 1.320 wide, 0.60 high. Abdomen: 6.60 long, 1.45 wide. Eye field: 1.00 long, anterior 1.05 wide, posterior 1.10 wide. Cheliceral length



Figs 121–128. *Festucula robustus* sp. n., general appearance: (121) male, dorsal view; (122) ditto, ventral view; (123) ditto, lateral view; (124) male “face”; (125) female, dorsal view; (126) ditto, ventral view; (127) ditto, lateral view; (128) female “face”. Scale bars: (121–123, 125–127) 1 mm, (124, 128) 0.2 mm.

0.50. Clypeal height 0.10. Diameter of AME 0.40. Length of leg segments (paratype): I 1.40+1.10+1.60+1.00+0.50; II 0.90+0.40+0.50+0.40+0.35; III 0.70+0.45+0.40+0.45+0.35; IV 1.10+0.50+0.80+0.75+0.45.

Leg spination: I: Tb v 0-1-1-1-0; Mt v 0-2-2ap. III: Mt v 0-1ap.

Coloration (Figs 125–128): Carapace low, brown, with black eye field, with small patch behind AME, with two lateral yellow bands covered with white adpressed hairs. Clypeus very low, brown, covered with white hairs (Fig. 128). Chelicerae brown. Sternum brownish-yellow. Abdomen grey-yellow, ventrally caudal part (approx. $\frac{1}{8}$) brown (Figs 126–127). Dorsum with broad brown longitudinal band (Fig. 125). Booklungs yellow. Spinnerets brown. Legs I long and robust, yellow-brown. Femora I yellow ventrally, yellow-brown dorsally. Tibiae I dark brown distally. Metatarsi and tarsi dark brown.

The rest of legs and palps yellow. All legs and palps covered with long thin bristles. Structure of epigyne and spermathecae as in Figs 118–120.

Holotype ♂: SOUTH AFRICA: *Gauteng*: Ndabushe Wildlife Sanctuary, Kromdraai, Krugersdorp, 26°02'S 27°46'E, LR 2383, grass, sweep net, 18.i.1998, A. Leroy (NCA 2010/3960);

Paratype 1 ♀: Same data as holotype (NCA 2010/3960).

Distribution: Known only from type locality (Fig. 26).

Festucula vermiformis Simon, 1901

Fig. 26

Festucula vermiformis Simon, 1901a: 155 (♀, not examined).

F. vermiformis: Simon 1901b: 607, fig. 718; Lessert 1933: 149, fig. 70; Prószyński 1987: 27; 2003: 64, figs 241–243; Wesolowska 1992: 52, figs 28–31.

See Wesolowska (1992) for description of female.

Distribution: North-West Africa (Egypt, Sudan) and the Levant (Israel) (Prószyński 2003) (Fig. 26).

Comments: This species was described by Simon (1901a) together with *F. lineata*. However, the diagnosis of the genus *Festucula* and the diagnostic figures of *F. vermiformis* were provided in another one of his works, *Histoire naturelle des araignées* (Simon 1901b).

NOMEN DUBIUM

Festucula monticola Berland & Millot, 1941

Festucula monticola Berland & Millot, 1941: 345, fig. 48 (♀, not examined).

F. monticola: Wesolowska 1992: 54 (**Nomen dubium**).

Comments: We attempted to locate the type specimen described from Dalaba, Guinea. Christophe Hervé (Muséum national d'Histoire naturelle, Paris, France) found the jar #2345 in which the type should have been kept. However, the vial inside the jar contained this handwritten note: 'specimen with epigyne removed – possibly lost (?). J. Prószyński 2.VI.1985'. It is very likely that this species name is a junior synonym of *F. lineata*. Yet, as we have failed to locate the type specimen, and because the original description and illustrations are inadequate to identify the species, we have considered this name *nomen dubium*. This unresolved problem needs further attention.

ACKNOWLEDGEMENTS

We are thankful to R. Jocqué (Tervuren, Belgium), D. Larsen (Cape Town, RSA), L. Lotz (Bloemfontein, RSA), P. Marais (Pretoria/Tshwane, RSA), P. Schwendinger (Genève, Switzerland) and C. Stoffels (Pietermaritzburg, RSA) for allowing us access to their collections. Also we wish to express our warmest thanks to A. Dippenaar-Schoeman and P. Marais for assisting GA during her stay in Pretoria/Tshwane. Special thanks to P. Marais for assistance in receiving collections from the Iziko and KwaZulu-Natal museums. J. Bosselaers (Belgium), R. Dudko (Russia), P. Croeser (RSA), C. Hervé (France), D. Hill (USA), R. Kekenbosch (Belgium), S. Koponen (Finland), C. Kropf (Switzerland), A. Leroy (RSA), D. Logunov (UK), Y. Marusik (Russia), M. Mostovski (RSA), A. Ndaba (RSA), A. Russell-Smith (UK) and P. Schwendinger (Switzerland) are thanked for various inputs during the preparation of this manuscript. Anonymous referees are thanked for their critical comments that improved the manuscript. This work was funded by the National Research Foundation of South Africa (grant no. TTK2008050500003).

REFERENCES

- BERLAND, L. & MILLOT, J. 1941. Les araignées de l'Afrique Occidentale Française I.-Les salticides. *Mémoires du Muséum d'Histoire Naturelle, Paris* (N.S.) **12**: 297–423.

- FAGE, L. 1923. Arachnides rapportées par M. Chabanaud de la Guinée française et du Liberia (1919–1920). *Bulletin du Muséum National d'Histoire Naturelle* **1923**: 298–302.
- HADDAD, C. & WESOŁOWSKA, W. 2011. New species and new records of jumping spiders (Araneae: Salticidae) from central South Africa. *African Invertebrates* **52**: 51–134.
- LAWRENCE, R. F. 1927. Contributions to a knowledge of the fauna of South-West Africa V. Arachnida. *Annals of the South African Museum* **25** (1): 1–75.
- LESSERT, R. DE. 1925. Araignées du Kilimandjaro et du Merou (suite). 5. Salticidae. *Revue suisse de zoologie* **31**: 429–528.
- LESSERT, R. DE. 1933. Araignées d'Angola. (Resultats de la Mission scientifique suisse en Angola 1928–1929). *Revue suisse de zoologie* **40** (4): 85–159.
- MADDISON, W.P. 1987. *Marchena* and other jumping spiders with an apparent leg-carapace stridulatory mechanism (Araneae: Salticidae: Heliophaninae and Thiodinae). *Bulletin of the British Arachnological Society* **7**: 101–106.
- MADDISON, W.P. & HEDIN, M.C. 2003. Jumping spider phylogeny (Araneae: Salticidae). *Invertebrate Systematics* **17**: 529–549.
- ONO, H. 1988. A revisional study of the spider family Thomisidae (Arachnida, Araneae) of Japan. Tokyo: National Science Museum. ii + 252 pp.
- PLATNICK, N.I. 2014. The world spider catalog, version 14.5. American Museum of Natural History. (<http://research.amnh.org/entomology/spiders/catalog/index.html>; accessed 29/01/2012)
- PRÓSZYŃSKI, J. 1976. Studium systematyczno-zoogeograficzne nad rodziną Salticidae (Aranei) Regionów Palearktycznego i Nearktycznego. *Wysza Szkoła Pedagogiczna Siedlcach* **6**: 1–260. (in Polish)
- PRÓSZYŃSKI, J. 1987. *Atlas rysunków diagnostycznych mniej znanych Salticidae 2*. Siedlce. 172 pp. (in Polish)
- PRÓSZYŃSKI, J. 2003. Salticidae (Araneae) of the Levant. *Annales Zoologici (Warszawa)* **53**: 1–180.
- PRÓSZYŃSKI, J. 2013. Salticidae (Araneae) of the World, version May 10th 2013. (<http://peckhamia.com/salticidae>; accessed 29/01/2014).
- SIMON, E. 1901a. Descriptions d'arachnides nouveaux de la famille des Attidae (suite). *Annales de la Société Entomologique de Belgique* **45**: 141–161.
- SIMON, E. 1901b. *Histoire naturelle des araignées*. T. 2. Paris: Encyclopédique Roret, pp. 381–668.
- WESOŁOWSKA, W. 1992. A revision of the spider genus *Festucula* Simon, 1901 (Araneae Salticidae). *Journal of African Zoology* **106**: 45–54.
- WESOŁOWSKA, W. & EDWARDS, G.B. 2012. Jumping spiders (Araneae: Salticidae) of the Calabar area (SE Nigeria). *Annales zoologici (Warszawa)* **62**: 733–772.
- WESOŁOWSKA, W. & HADDAD, C.R. 2009. Jumping spiders (Araneae: Salticidae) of the Ndumo Game Reserve, Maputland, South Africa. *African Invertebrates* **50**: 13–103.
- WESOŁOWSKA, W. & RUSSELL-SMITH, A. 2000. Jumping spiders from Mkomazi Game Reserve in Tanzania (Araneae Salticidae). *Tropical Zoology* **13**: 11–127.

