New species and new records of jumping spiders from Botswana, Namibia and Zimbabwe (Araneae: Salticidae)

WANDA WESOŁOWSKA
Institute of Zoology, Wroclaw University, Sienkiewicza 21, 50-335 Wroclaw, Poland,
e-mail: tomwes@biol.uni.wroc.pl


Key words: arachnology, taxonomy, Salticidae, new species, Afrotropical Region.

INTRODUCTION

The diversity of salticids in most areas of southern Africa is still poorly known. Scarce information on these spiders originates mostly from the 19th century. Only the area of South Africa has been studied relatively intensely. Numerous observations on the salticids of this country have been provided by PECKHAMS’ (1902, 1903) and by LAWRENCE (1937, 1938, 1942, 1947) who intensively explored Zululand and Natal. However, contemporary studies have proved that the knowledge of the spider fauna...
of South Africa still remains insufficient. For example, the last papers of *Wesołowska & Haddad* (2009) and *Haddad & Wesołowska* (2011) brought the descriptions of as much as 29 new species of salticids from this country.

The spider faunas of other countries of southern Africa are known to even smaller extent. *Peckham’s* (1903) reported only 25 salticid species from Zimbabwe. Many new data have been recently published by *Wesołowska* (1999) and *Wesołowska & Cumming* (2008, 2011). There are 105 salticid species known from Zimbabwe at the moment (*Wesołowska & Cumming* 2011). The number of species is quite impressive, but it should be kept in mind that only limited parts of the country were searched and its spider fauna is known only fragmentarily. Namibian spiders were studied by *Lawrence* (1927, 1928). His data were recently supplemented by records from the Brandberg massif (*Wesołowska* 2006). Nevertheless, only 43 species of jumping spiders are known from this large country (*Prószyński* 2011). Botswana remains practically a white spot on the map, only 17 salticid species were reported from here (*Prószyński* 2011).

This study presents new results of extensive recent faunistic explorations of Botswana, Zimbabwe and Namibia. Twelve new species and unknown hitherto sexes of three species are described. In addition new distributional records for several other species are given.

Voucher specimens have been deposited in the following collections:
- Natural History Museum, London (NHM);
- California Academy of Sciences, San Francisco (CAS);
- National Museum, Bloemfontein, South Africa (NMBA);
- National Museum of Namibia, Windhoek (SMN);
- National Museum (Natural History) of Zimbabwe, Bulawayo (NMZ);
- Plant Protection Research Institute, Pretoria, South Africa (PPRI);
- Royal Museum for Central Africa, Tervuren (MRAC).

**SYSTEMATICS**

*Cembalea hirsuta* sp. n.

Figs 1-4, 85

**Diagnosis**

Distinguished from *Cembalea triloris* *Haddad & Wesołowska*, 2011 by having clearly longer embolus and triangular distal haematodocha (oval in *C. triloris*).

**Etymology**

The name refers to very hairy male pedipalps.

**Material examined**


DESCRIPTION

Measurements [in mm]. Cephalothorax: length 2.5-2.6, width 1.9-2.0, height 1.0-1.1. Abdomen: length 2.4-2.7, width 1.6-1.8. Eye field: length 1.0-1.2, anterior width 1.5-1.7, posterior width 1.6-1.8.

1. Cembalea hirsuta sp. n., holotype: 1 - palpal organ, ventral view, 2 - palpal organ, ventrolateral view, 3 - palpal organ, lateral view, 4 - palpal organ, dorsal view
Male. General appearance as in Fig. 85. Carapace high and convex, sloping posteriorly, brown with slightly darker eye field. Brown hairs cover thoracic part, white hairs form lighter median streak, some whitish hairs on carapace sides posteriorly. Eyes of anterior row with fringe of white scales from above, some white hairs on eye field. Clypeus clothed in brown hairs. Chelicerae dark brown, endites and labium lighter with whitish tips, sternum yellow with dense white hairs. Abdomen oval, in holotype dark brown with irregular whitish marginal patches, in paratype greyish fawn with brown median streak, covered with dense hairs, venter light. Spinnerets clothed in grey hairs. Legs orange, femora with dark hairs on distal ends. First pair of legs slightly darker, femur with long dense hairs ventrally (Fig. 85). Pedipalps light brown, clothed in very dense and long hairs (white with admixture of brown ones). Palpal femur with dense long white hairs. Tibia short, single apophysis with long additional terminal spike (Figs 2, 3). Bulb with convex anterior haematodocha, embolus long, encircling bulb (Fig. 1). Cymbium with long tip, curved to retrolateral side.

Female unknown.

**Distribution**

Known only from the type locality in western Namibia.

**Cembalea triloris** Haddad & Wesołowska, 2011

Figs 5-7

*Cembalea triloris* Haddad & Wesołowska 2011: 55.

**Material examined**


5-7. *Cembalea triloris*: 5 - epigyne, 6 - internal structure of epigyne, 7 - diagrammatic course of seminal duct
NEW SPECIES AND NEW RECORDS OF JUMPING SPIDERS

DESCRIPTION

Description of male is given in Haddad & Wesołowska (2011).

Female. Measurements. Cephalothorax: length 2.1-2.2, width 1.6-1.8, height 0.9-1.0. Abdomen: length 2.4-2.6, width 1.6-1.8. Eye field: length 1.0-1.1, anterior width 1.5, posterior width 1.7.

Carapace high, sloping posteriorly, dark brown, eyes surrounded with black rings. Light median band composed of whitish hairs on thoracic part, two poorly contrasting lateral bands. White scales surround anterior eyes, whitish hairs cover eye field. Clypeus high, clothed in dense light hairs, stretches to carapace sides. Chelicerae and labium light brown, endites and sternum dark yellow. Abdomen oval, sandy in colour, clothed in dense whitish and fawn hairs, with poorly defined traces of darker pattern composed of median chain of chevrons and diagonal submarginal lines. Venter light. Spinnerets dark grey. Legs yellow, bearing numerous spines (especially III and IV pairs). Epigyne with deep central cavity (Fig. 5). The cavity leads to a deep pocket (Fig. 6), seminal ducts long, meandering, with accessory glands fall into their initial parts.

DISTRIBUTION

Known from South Africa and south part of Namibia.

REMARKS

The description of the female is given for the first time.

Dendryphantes sanguineus sp. n.

Figs 8-17, 86-87

DIAGNOSIS

Distinguished by intensively claret coloration of abdomen. The male is related to Dendryphantes rafalskii Wesołowska, 1999 from Zimbabwe, but has shorter tibial apophysis and base of embolus is enveloped with big terminal apophysis. The female genitalia resemble these in Dendryphantes purcelli Peckham & Peckham, 1903 known from South Africa but seminal ducts and receptacles are clearly shorter, also sclerotization of gonopores surroundings is more delicate.

ETYMOLOGY

The name is derived from abdomen colouration.

MATERIAL EXAMINED


Paratypes: together with holotype, 1 male, 1 female; same locality, 1 male, 1 subad. male, 3 females, 1 imm., 3.X.2010 (MRAC).
Description
Measurements (male/female). Cephalothorax: length 1.7-1.9/1.8-1.9, width 1.2-1.3/1.3-1.4, height 0.7-0.8/0.6-0.7. Abdomen: length 1.9-2.3/2.2-2.3, width 1.0-1.5/1.4-1.7. Eye field: length 0.8/0.8, anterior width 1.0-1.1/1.0-1.1, posterior width 1.1-1.2/1.1-1.2.

8-13. *Dendryphantes sanguineus* sp. n., paratypes: 8, 10 - palpal organ, ventral view 9, 11 - palpal organ, lateral view, 12 - palpal tibia, dorsal view, 13 - embolus, dorsal view (cymbium removed)
Male. Small spider. Carapace oval, broadest at half of its length, brown, slightly
darker marginally. Eyes surrounded with black rings, eye field delicately pitted, in
anterior part large silver path formed by translucent guanine. Some short whitish hairs
on slopes of carapace, near eyes long brown bristles. Clypeus very low. Chelicerae
large, brown. Labium, endites and sternum light brown. Abdomen ovoid, reddish brown
with faint pattern, sides anteriorly yellowish. Dorsum of abdomen clothed in delicate
colourless hairs. Venter light brown. Spinnerets dark brown. Legs brown, femora with
darker rings, first pair slightly stouter and darker than others, tibia I with three pairs of
spines ventrally, metatarsus with two pairs. Leg hairs colourless, spines brown. Pedipalps
brown, palpal organ as in Figs 8-12. Tibial apophysis short (Fig. 9), base of embolus
hidden under terminal apophysis of bulb (Figs 8, 10), delicate membrane joins lower
tip of this apophysis with tip of embolus. Structure of embolus as in Fig. 13.

14-17. *Dendryphantes sanguineus* sp. n., paratypes: 14, 15 – epigyne, 16, 17 - internal structure of epi-
Female. General appearance as in Figs 86, 87. Shape of body as in male. Colouration of abdomen slightly lighter, light brown. Whole carapace covered with delicate dense short whitish hairs, among them scarce long brown bristles. Guanine crystals translucent through integument on eye field, in centre of ocular area two blackish patches. Abdomen intensively claret, with traces of darker pattern, clothed in colourless hairs and scarce long brown bristles. Venter also claret with two light streaks and two lines formed with light dots. Legs yellow, tuft of black hairs at tarsi claves. Epigyne with central depression (Figs 14, 15). Gonopores framed by sclerotized rims (Figs 16, 17).

**Distribution**
Known only from the type locality in eastern Zimbabwe.

**Evarcha karas sp. n.**
Figs 18-19

**Diagnosis**
The species resembles *Evarcha flagellaris* HADDAD & WESOŁOWSKA, 2011 from South Africa, but has not striped pattern of abdomen, the shape of tibial apophysis is different (narrow and pointed in *E. flagellaris*, wide and bifurcated in *E. karas*), the end of embolus reaches to tip of tibial apophysis.

18-19. *Evarcha karas* sp. n., holotype: 18 - palpal organ, ventral view, 19 - palpal organ, lateral view
**ETYMOLOGY**

The name is a noun in apposition, referring to the region of Namibia, where the type locality is placed.

**MATERIAL EXAMINED**


**DESCRIPTION**

Measurements. Cephalothorax: length 2.5, width 1.9, height 1.0. Abdomen: length 2.4, width 1.7. Eye field: length 1.1, anterior width 1.6, posterior width 1.7.

Male. Shape of body typical for *Evarcha* members. Carapace high, dark brown, vicinity of eyes black. Whole carapace covered with white greyish hairs, only on foveal area hairs rubbed off. Long brown bristles on eye field, denser anteriorly, tufts of long setae form “horns” at smallest eyes. Clypeus moderately high, brownish with yellow band, below anterior lateral eyes four parallel lines composed of white hairs. Anterior eyes encircled with white and yellowish scales. Mouth parts brown, sternum yellowish orange. Abdomen ovoid, brownish grey with irregular median yellow streak, dark line along centre of the streak. Hairs correspond to background colour cover abdomen, among them long brown bristles. Venter light, slightly tinged with grey. Spinnerets grey. Legs light brown, ends of their segments darker. Longest legs of first pair, femur with 1-1-3 spines dorsally, patella with 0-1 prolaterally, tibia 2-2-2 ventrally, metatarsus 2-2 ventrally. Leg hairs and spines brown. Pedipalps light brown, clothed in dense whitish hairs. Bulb rounded, very convex; embolus thin and long, with whip-shaped end, tibial apophysis large, with bicuspid tip (Figs 18, 19).

Female unknown.

**DISTRIBUTION**

Known only from the type locality in southern Namibia.

*Heliophanus (Heliophanus) lesserti* WESOŁOWSKA, 1986


**MATERIAL EXAMINED**


**DESCRIPTION**


Male. General appearance as in Fig. 88. Medium sized, dark coloured spider. Carapace slightly pear-shaped, moderately high, gently sloping posteriorly, dark brown;
eye field black, shiny, pitted. Long brown bristles near eyes, colourless hairs on dorsum of carapace. Clypeus low, blackish. Mouth parts and sternum dark brown. Abdomen ovoid, black, clothed in delicate colourless hairs. White hairs form wide light band along anterior margin, the band extends on sides to mid abdominal length. Venter dark. Spinnerets blackish. Legs dark brown, first pair stouter and longer than others. Pedipalps dark, covered with dense hairs. Palpal femur with ventral furrow and wide short apophysis (Fig. 24). Cymbium long narrow, bulb short in relation to it, square with elongated corners, embolus thin and long (Figs 20, 21). Ventral tibial apophysis short; dorsal one flat, pincers shaped (Figs 22, 23).

**Distribution**
Known from Congo (Zaire), Botswana, Namibia and South Africa, in Zimbabwe recorded for the first time.


**Heliophanus (Helafricanus) megae Wesołowska, 2003**
Figs 25-27

*Heliophanus megae* Wesołowska 2003a: 274.
NEW SPECIES AND NEW RECORDS OF JUMPING SPIDERS

MATERIAL EXAMINED

DESCRIPTION
Measurements (male/female). Cephalothorax: length 1.6-2.1/1.7-1.9, width 1.2-1.5/1.3-1.4, height 0.6-0.7/0.7-0.8. Abdomen: length 1.8-2.0/2.0-3.2, width 1.2-1.5/1.4-2.3. Eye field: length 0.6-0.9/0.8-0.9, anterior width 0.9-1.0/0.9-1.0, posterior width 1.0-1.1/1.0-1.1.

Description of male is given in WESOŁOWSKA (2003a).

Female. Slightly larger than male. Carapace brown with darker eye field, black near eyes, ocular area pitted, clothed in long brown bristles, denser at first eye row. White hairs form thin median stripe on carapace, extending to path at thoracic part anteriorly. Some white hairs in vicinity of posterior median eyes and on slopes of carapace. Small white scales surround anterior median eyes, white hairs on clypeus. Chelicerae and sternum light brown, endites and labium dark yellow. Abdomen greyish brown, clothed in dark hairs, with pattern composed of lighter spots (Fig. 25). Venter light. Spinnerets dark. Leg yellow, femora tinged with grey, especially their basis darker, distal ends of tibiae also dark. Leg hairs brown. Epigyne typical for members Heliafricanus subgenus, with two posterior depressions (Fig. 26). Vicinity of gonopores strongly sclerotized, internal structure of epigyne as in Fig. 27.

DISTRIBUTION
Known only from the type locality in eastern Zimbabwe.

Remarks
The first description of the female is given here.

**Heliophanus (Heliophanus) tenuitas sp. n.**
Figs 28-31

**Diagnosis**
The smallest (c. 2 mm) species in the genus, characterized by the short embolus, furcated femoral apophysis and very long and thin dorsal tibial apophysis of the palp.

**Etymology**
From Latin, give the word here meaning “smallness” and refers to the body size.

28-31. *Heliophanus tenuitas* sp. n., holotype: 28 - palpal organ, ventral view, 29 - palpal organ, lateral view, 30 - palpal organ, dorsal view, 31 - palpal femur
Material examined

Description
Measurements. Cephalothorax: length 1.0, width 0.7, height 0.3. Abdomen: length 1.0, width 0.7. Eye field: length 0.4, anterior width 0.6, posterior width 0.7.

Male. Diminutive spider, measuring only about 2 mm. Carapace dark brown, eye field black, pitted. Some delicate colourless hairs cover carapace. Mouth parts and sternum brown. Abdomen ovoid, black, dorsum covered with large scutum, venter dark. Spinnerets brown. Legs brown with slightly lighter metatarsi and tarsi. Leg hairs dark. Pedipalps brown. Bulb oval, embolus very short (Fig. 28). Tibia with three apophyses; ventral small spike like, retrolateral hooked and dorsal very thin and long (Figs 28, 30). Femur of palp with apophysis bifurcated on tip (Fig. 31).

Female unknown.

Distribution
Known only from the type locality in south-eastern Zimbabwe.

Holocalaetis zuluensis Lawrece, 1973


Material examined

Distribution
Hitherto known from South Africa and Tanzania, now firstly recorded in Zimbabwe.

Langelurillus minutus Wesołowska & Cumming, 2011

Langelurillus minutus Wesołowska & Cumming 2011: 79.

Material examined

Distribution
Hitherto known only from Zimbabwe, it is the first record from Namibia.
**Langelurillus namibicus sp. n.**
Figs 32-33

**Diagnosis**
The female is distinctive in having a unique form of epigyne, with very broad pocket at epigastric furrow.

**Etymology**
The name is derived from Namibia, the country of its type locality.

**Material examined**

**Description**
Male unknown.
Female. Carapace moderately high, dark brown with almost black eye field, clothed in dense greyish white hairs clinging to dorsum, some long brown bristles among them on eye field, short thick rod bristles on anterior part of ocular area. Anterior eyes surrounded by small white scales. Clypeus low, orange, some white hairs on it. Chelicerae light brown, with small tooth on retrolateral margin. Labium and endites brownish with pale tips. Sternum brown. Abdomen almost spherical, brownish grey, covered with delicate short grey hairs and scarce brown bristles. Venter light. Spinnerets long, yellow with dark ends. Legs short, first pair with very short segments, orange brownish with darker marks at basis and ends of segments. Leg hairs brown, spines numerous, light. Epigyne small, with very wide pocket at epigastric furrow (Fig. 32). Gonopores

32-33. *Langelurillus namibicus* sp. n., holotype: 32 - epigyne, 33 - internal structure of epigyne
situatet posteriorly, seminal ducts short, receptacles composed with three globular chambers, strongly sclerotized (Fig. 33).

DISTRIBUTION
Known only from the type locality in southern Namibia.

*Langelurillus sibandai* sp. n.
Figs 34-35, 89

DIAGNOSIS
The largest (over 10 mm) member of the genus, with dumpy body, the epigyne with two small gonopores situated laterally. The seminal duct with a large chamber in its initial part.

ETYMOLOGY
Named after the collector Mr Lucas Masenga SIBANDA.

MATERIAL EXAMINED
Paratype: together with holotype, 1 female.

DESCRIPTION
Measurements. Cephalothorax: length 4.7-5.7, width 4.3, height 2.2-2.3. Abdomen: length 6.9-7.1, width 6.1-7.0. Eye field: length 1.7-1.9, anterior width 2.4-2.6, posterior width 2.5-2.7.
Male unknown.

34-35. *Langelurillus sibandai* sp. n., paratype: 34 - epigyne, 35 - internal structure of epigyne
Female. General appearance as in Fig. 89. Large sized spider, its body length exceeds 1 cm. Carapace oval, moderately high with gently sloped posterior part, brown with traces of two light streaks on thoracic area. Eye field short, dark, densely covered with greysish white scale like hairs, among them short rod bristles on anterior part of ocular area, two round white patches framed with fawn areolas in centre of eye field (Fig. 89). Anterior eyes surrounded with white scales. Some short light hairs and sparse brown bristles on thoracic part of carapace, denser bristles also at eyes. Clypeus with white hairs along lower margin and thin white line below anterior median eyes. Chelicerae large, toothless, brownish orange but their tips and fangs black. Endites and labium orange with yellowish upper margins. Sternum orange. Abdomen very large, bulged, fawn with chain of five pairs of lighter spots encircled by brown rings and faint submarginal patches. Sides light marked and streaked with brownish stains, venter whitish yellow. Spinnerets fawn. Legs short, brownish orange, tarsi I and II slightly darker. Segments of first pair of legs very short. Leg hairs thin, brown; spines short, numerous. Spination of leg I: femur dorsally 1-1-5, tibia pro- and retrolaterally 1, ventrally 2-2-2, metatarsus dorsally 2-2 apically, pro- and retrolaterally 2-1 apically, ventrally 2-2 apically. Epigyne large, triangular, with two small gonopores laterally (Fig. 34). Internal structure of epigyne as in Fig. 35; seminal ducts with enlargements, receptacles spherical, complex, multi-chambered.

**Distribution**

Known only from the type locality in south-western Zimbabwe.

**Remarks**

Generic placement of this species requires confirmation after discovery of the male.

*Langona bethae Wesołowska & Cumming, 2011*

Figs 36-40


**Material Examined**

DESCRIPTION
Description of both sexes is given in Wesołowska & Cumming (2011). Female genitalia of the species showed in Figs 36-39.

DISTRIBUTION
Hitherto known only from Zimbabwe, now firstly recorded in Botswana.

REMARKS
The male of the species has palp similar to this in *L. pilosa*, but tibial apophysis shorter. General colouration lighter than in the latter species, eye field with dense yellowish hairs.

36-40. *Langona bethae*: 36, 37 - epigyne, 38, 39 - internal structure of epigyne, 40 - diagrammatic course of seminal duct
**Diagnosis**

Distinguishable by the large size, dark colouration and small epigyne with thick-walled distal parts of seminal ducts and small receptacles. The epigyne in external view similar to that in *Langona bethae*, but receptacles are situated more posteriorly, at the epigastric furrow.

**Etymology**

The name refers to dark colouration of the spider.

**Material Examined**


**Description**


Male unknown.

Female. Large spider, ranging over 10 mm. Carapace pear-shaped, widest at coxae III, with very short eye field, occupying only quarter of carapace length. Eye field black, clothed in dense short light greyish hairs, among them short rod bristles, thoracic part of carapace dark brown, greyish hairs form wide median light band on it, laterally from the band brown areas with dark hairs, on side surfaces of carapace hairs light. Clypeus moderately high, brown. Chelicerae light brown, toothless. Labium, endites

41-42. *Langona fusca* sp. n., holotype: 41 - epigyne, 42 - internal structure of epigyne
and sternum orange. Abdomen brown with narrow median light streak slightly serrated posteriorly, sides light marked and streaked with brownish stains, venter greyish yellow. Hairs correspond to background colour cover abdomen. Spinnerets dark. Femora of legs light brown with dark marks, distal segments dark brown. Epigyne small, with narrow horseshoe-shaped depression, (Fig. 41). Internal structure as in Fig. 42, seminal ducts form initial loop, distal part with thick walls, receptacles smaller than in the related species.

**Distribution**
Known only from the type locality in western Zimbabwe.

**Remarks**
The placement of this species in the genus *Langona* will be verified after revision of the related African Aelurillinae.

*Langona mediocris* Wesołowska, 1999


**Material Examined**

**Distribution**
Known only from Zimbabwe.

*Langona pilosa* Wesołowska, 2006


**Material Examined**
NAMIBIA, Etosha National Park, 21°S:16°E, pitfall trap, 13 males, 1 female, 19. XI.1996, leg. A. Russell-Smith (MRAC); Windhoek, 22°35’S:17°05’E, 1 male, III.1991, leg. V. Roth (CAS); same locality, 7 males, 4 females, II.1975 (SMN 36126); Lichtenstein, north Windhoek distr., under rocks, 1 male, 19.XII.1988, leg. C. Mannheimer (SMN 41992); Kavango Gebied, Rundu, 17°55’S:19°45’E, 1 male, 10.III.1990, leg. W. Pulawski (CAS).

**Description**
Measurements (male/female). Cephalothorax: length 2.3-2.8/3.0-3.1, width 1.7-1.9/2.2-2.3, height 1.0-1.2/1.3. Abdomen: length 2.1-2.5/2.9-3.5, width 1.6-1.9/2.3-2.7. Eye field: length 0.9-1.0/1.0-1.1, anterior and posterior width 1.3-1.5/1.5-1.6.
43-48. *Langona pilosa* 43 - palpal organ, ventral view, 44 - palpal organ, lateral view, 45, 46 - epigyne, 47, 48 - internal structure of epigyne
Male. Carapace pear-shaped, long, moderately high, brown with black area near eyes. Eye field short, clothed in whitish hairs clinging to surface, stiff short rod bristles on anterior part of eye field, eyes of anterior row surround by white scales. Two light stripes comprised of white hairs on thoracic part, long brown bristles on dark area, some light hairs on slopes. Clypeus light brown with dark hairs. Chelicerae orange, toothless. Labium and endites yellow, sternum brown. Abdomen with light sides, large greyish brown leaf-shaped patch with light wide serrate median streak on dorsum. Brown hairs cover dorsum of abdomen, long and dense at anterior margin. In some specimens hairs rubbed off; dorsum with large brown scutum covering about two third of its length. Venter light. Spinnerets black. Legs yellowish orange, bearing brown hairs and long spines, dark scopulae on tarsi. Pedipalps brown, bulb and cymbium almost black, whole palp very pilose, hairs dense and long; white hairs on dorsum of femur, patella, tibia and base of cymbium, black hairs on ventral surface of femur and on sides other segments, large black tuft on tibia ventrally (Fig. 44). Tibial apophysis very thin and long (Figs 43, 44).

Female. Like male, but slightly larger and colouration less contrasted. Eye field with five ill-defined lighter spots. Sternum yellow. Sides of abdomen marked with small dark stains. Epigyne with narrow horseshoe-shaped depression (Figs 45, 46). Internal structure of epigyne similar to that in “Langelurillus” ignorabilis Wesołowska & Cumming, 2008 from Zimbabwe, but differs slightly in course of seminal ducts (compare Figs 47, 48 herein with Figs 76, 77 in Wesołowska & Cumming 2008).

DISTRIBUTION
Hitherto known only from Namibia.

REMARKS
The length of male palpal tibial apophysis in male pedipalp shows some variety, but is longer than in L. bethae. The female of this species is described for the first time here.

*Langona sabulosa* sp. n.
Figs 49-55, 90-91

DIAGNOSIS
The male is similar to *Langona hirsuta* Haddad & Wesołowska, 2011 but differs in colouration, having contrasting pattern of abdomen (uniform in *L. hirsuta*) and three light patches on eye field. The pedipalps are yellow (dark brown in *L. hirsuta*), less hairy, the tibial palpal apophysis is shorter and bulb narrower. The female has unique form of epigyne with small gonopores.

ETYMOLOGY
The name refers to the habitat of the species.
**Material examined**


Paratypes: Namibia, Keetmanshoop, oasis, 28°44’S:17°54’E, dunes, pitfall trap, 26-29.III.2003, 1 female, leg. R. Poler & F. van Deventer (NMBA); Etosha National

49-55. *Langona sabulosa* sp. n., paratypes: 49 - palpal organ, ventral view, 50 - palpal organ, lateral view, 51 - palpal organ, dorsal view, 52 - embolus, apical view, 53 - abdominal pattern of female, 54 - epigyne, 55 - internal structure of epigyne
NEW SPECIES AND NEW RECORDS OF JUMPING SPIDERS

Park, pitfall trap, 11.XI.1996, 1 female, leg. A. Russell-Smith (MRAC); same locality, Andoni North, 12.XI.1996, 9 males, 2 females, 1 imm., leg. A. Russell-Smith (MRAC); Rehoboth distr., 8 km N from Rehoboth, 23°15'S:17°05'E, 15.II.1990, 1 male, leg. W. Pulawski (CAS); same locality, 7.II.1990, 1 male, leg. W. Pulawski (CAS).

DESCRIPTION
Measurements (male/female). Cephalothorax: length 2.2-2.9/3.4-4.0, width 1.8-2.3/2.6-3.0, height 1.2-1.3/1.4-1.6. Abdomen: length 2.2-2.6/4.2-4.5, width 1.7-2.1/3.6-3.9. Eye field: length 1.0-1.2/1.4-1.6, anterior width 1.4-1.5/1.8-1.9, posterior width 1.3-1.4/1.9-2.0.

Male. General appearance as in Figs 90, 91. Carapace pear-shaped, widest at coxae III, moderately high, brown with blackish eye field. Whole carapace clothed in dense short whitish hairs, among them some long brown bristles on eye field, short rod setae on anterior part of ocular area. Two faint white streaks on carapace, three rounded white spots in centre of eye field. In some specimens carapace rubbed off. Anterior eyes fringed with white scales. Fovea readily visible. Chelicerae toothless, yellow. Labium and endites light, sternum dark brown clothed in whitish hairs. Abdomen oval, on dorsum large leaf shaped blackish brown patch with median irregular light stripe composed of whitish hairs (Fig. 90); sides mottled, marked with numerous brownish dots on light background. Venter whitish. Spinnerets dark. Legs yellow, sometimes distal parts of their segments slightly darker, scopulae dark. Leg hairs brown and colourless, numerous long spines. Pedipalps light, yellowish orange, clothed in long dense white hairs and long brown bristles. Single thin tibial apophysis (Figs 50, 51), embolus spirally coiled on bulb tip (Figs 49, 52).

Female. Clearly larger than male. Carapace similar as in male. Clypeus medium high, bearing white hairs. Abdomen swollen, almost heart-shaped (Fig. 53), its pattern as in male but lighter. Abdominal dorsum covered with hairs clinging to surface and scarce longer brown bristles. Spinnerets long. Legs yellowish brown, darker rings on proximal and distal ends of their segments. Epigyne large, triangular, with two small gonopores laterally and small pocket at epigastic furrow (Fig. 54). Internal structure of epigyne as in Fig. 55; gonopores situated posteriorly, seminal ducts with big enlargements, receptacles composed with a few loose chambers.

DISTRIBUTION
Known only from Namibia.

REMARKS
The placement of this species in the genus Langona is tentative and is based on toothless chelicerae and similarities of the male to the members of this genus. However, the species differs in some details from Langona (rod hairs on eye field, absence of tuft of stout bristles at tibial apophysis in male palp, unlike form of epigyne) and clarification of the species’ relationships requires a revision of Aelurillinae.
**Langona tortuosa** sp. n.

**Figs 56-60**

**Diagnosis**

The species resembles *Langona pilosa* Wesołowska, 2006. The male is recognizable by having clearly shorter tibial apophysis (in *L. pilosa* apophysis equal to half length of cymbium). The female has far longer seminal ducts, forming many twists with smaller diameter of initial loop than in *L. pilosa*.
ETYMOLOGY
From Latin, give the word meaning “winding” and refers to the course of seminal ducts, which is very meandering.

MATERIAL EXAMINED
Paratypes: together with holotype, 3 males; ZIMBABWE: Matabeland, Thuli Safari Area, Shashe Wilderness Camp, 21°58’S:29°07’E, 1 male, 8-11.IV.1990, leg. Falcon College (NMZ/A 9880).

DESCRIPTION
Measurements (male/female). Cephalothorax: length 2.4-2.5/2.8, width 1.7-1.8/2.3, height 1.0-1.1/1.3. Abdomen: length 1.9-2.6/2.6, width 1.4-2.0/2.2. Eye field: length 0.9-1.0/1.1, anterior and posterior width 1.4-1.5/1.6.
Male. Medium sized, pilose spider. Carapace oval, moderately high, dark brown, clothed in dense light greyish hairs. Eye field short, black, with very dense greyish hairs and thick short rod-like bristles anteriorly. Anterior median eyes surround by very small fawn scales. Clypeus with light hairs. Chelicerae toothless. Labium and endites light brown, sternum darker. Abdomen oval, blackish brown, probably bald, with large scutum covering almost whole dorsum. Venter paler, light brownish. Spinnerets blackish. Leg formula 3412. Legs light brown, with darker patches, their spines numerous, long, pale; hairs brown. Tarsi with dark scopulae. Pedipalps brown, very hairy. Femur ventrally with long whitish and brown hairs, all segments - including base of cymbium - dorsally from retrolateral side clothed in dense long white hairs, prolaterally hairs dark. Cymbium short, hairs covering majority part of cymbial dorsum very long, dense, dark and glossy, give angular look of palp (in lateral view, Fig. 57). Tuft of very long and dense blackish hairs on palpal patella ventrally. Tibia with single apophysis (Figs 56, 57). Bulb oval with triangular posterior lobe; embolus hidden between bulb and cymbium, coiled in bulb tip, thin and long (Figs 56, 58).

Female. Slightly larger than male, similarly coloured. Abdomen brown with trace of median serrate belt. Epigyne with two shallow depressions laterally (Fig. 59). Seminal ducts very long, initially weakly sclerotized, form loop, in distal parts more sclerotized, very convoluted, receptacles single-chambered, bean-shaped (Fig. 60).

DISTRIBUTION
Known from Namibia and Zimbabwe.

REMARKS
The placement of this species in the genus Langona is tentative, probably a new genus should be created for this species and a few related ones after revision of the African Aelurillinae.
Langona zimbabwensis Wesołowska & Cumming, 2011
Figs 61-64

Langona zimbabwensis Wesołowska & Cumming 2011: 84.

Material examined

Description
Description in Wesołowska & Cumming (2011). Structure of male pedipalp shown in Figs 62-64. Colouration of first leg as in Fig. 61.

Distribution
Known only from Zimbabwe.

61-64. Langona zimbabwensis: 61 – first leg, 62 - palpal organ, ventral view, 63 - palpal organ, lateral view, 64 – bulb and embolus apicolateral view (cymbium removed)
**Mihroheros termitophagus** Wesolowska & Cumming, 1999


**Material Examined**

BOTSWANA, island on Moanachira, 19°00’S:23°25’E, short grass in *Acacia nigrescens* woodland, 1 female, 17.VII. 1977, leg. A. Russell-Smith (NHM); Okawango, mopane woodland Maxwee, 19°20’S:23°25’E, 1 male, 30.VI.1976, leg. F. Wanless (NHM); same locality, numerous males and females, 21.IV.1976 (NHM).

**Distribution**

Known from South Africa and Zimbabwe, in Botswana recorded for the first time.

**Mogrus matisi** (Berland & Millot, 1941)

*Philaeus matisi* Berland & Millot 1941: 341.

*Philaeus senilis* Denis 1955: 126.


**Material Examined**

ZIMBABWE, Tsholotsho, 19°46’S:27°44’E, 3500 m.a.s.l, 1 male, 8-11.XI.2001, leg. L. Sibanda (PPRI).

**Distribution**

Widespread in Africa, known from Senegal, Niger, Yemen, Saudi Arabia, Ethiopia, Sudan and Tanzania, for the first time recorded in Zimbabwe. This is the most southern record of the species, far beyond hitherto known range.

**Parajotus refulgens** Wesolowska, 1999

Figs 65-68, 92-93


**Material Examined**

BOTSWANA, Okawango swamps, Shakawe Fishing Camp, 18°26’S:21°54’E, savanna, 1 male, XII.2001, leg I. van Niekerk (NMBA); ZIMBABWE, Mashonaland East Prov., Lake Chivero, 17°50’S:31°03’E, granite boulders, 1 male, 28.I.2001, leg. M. Cumming (NHM); same locality, 6 males, 3 females, 9.VIII.2003 (NMZ); same locality, 1 male, 1 female, 6.II.2010; same locality, 1 male, 6.XI.2010 (NMBA).
DESCRIPTION

Measurements (male/female). Cephalothorax: length 1.6-2.1/1.6-1.9, width 1.2-1.8/1.2-1.3, height 0.9-1.2/0.8-0.9. Abdomen: length 1.5-2.7/1.5-1.6, width 1.2-1.9/1.2-1.3. Eye field: length 0.8-1.1/0.8-0.9, anterior width 1.2-1.5/1.2-1.3, posterior width 1.1-1.4/1.1-1.2.

Male. General appearance as in Figs 92, 93. Carapace high, dark brown, eye field large, vicinity of eyes almost black. Wide white streaks composed of light hairs on lateral surfaces of carapace, along lateral margins dark lines. White hairs form three rounded spots on thoracic part of carapace, two small spots in front of posterior lateral eyes and larger patch on eye field between anterior median eyes. Main eyes large, their diameter over twice longer than in anterior laterals. Long brown bristles along first row of eyes. A few characteristic long black scale-like hairs near posterior median eyes (Fig. 93). Anterior eyes encircled by reddish small scales. Clypeus moderately high with mat of white hairs, such hairs cover also bases of chelicerae (Fig. 93). Sternum yellowish, mouth parts light brown. Abdomen ovoid, in some specimens slightly bleached, greyish or reddish brown with traces of three transverse lighter streaks, anteriorly scarce long brown bristles, venter light, sometimes tinged with grey. Spinnerets yellowish. Legs long, yellow or light brown, leg hairs brown. First pair longest, especially tibia and metatarsus. There is large individual variation of males’ first leg length. Spines brown, numerous. Spination of leg I: femur dorsally 0-1-1-5, patella prolaterally 0-1; tibia ventrally 2-2-2 (last pair apical), pro- and retrolaterally 1-1; metatarsus dorsally with 2 apical spines, ventrally 13(!) irregularly distributed short spines (Fig. 65). Pedipalps

yellow or brownish with dark brown hairs on dorsal surface of femur and long dense white hairs on tibia prolaterally and on cymbium (Fig. 93). Palpal tibia long, with single short apophysis, bulb small rounded, embolus thin (Figs 66, 67).

Female. Slightly smaller than male. Black scales near last eyes absent, colouration as in male, abdominal pattern more contrasting. Legs generally white yellowish, with grey spots on base of femora dorsally, distal third of femur length dark grey, also patella and tibia greyish. First pair of legs not such long as in male, they metatarsi without dense ventral spines (on ventral surface only 2 and 2 apical spines). Epigyne weakly sclerotized, with large shallow depression and pair of central pockets (Fig. 68). Internal structure shows in Wesołowska (1999).

**Distribution**
Known from Zimbabwe and one locality in southern Congo (Zaire), it is the first record from Botswana.

*Phlegra karoo* Wesołowska, 2006


**Material examined**
NAMIBIA, Windhoek, 22°35'S:17°05'E, 1 male, 1 female, II.1975 (SMN).

**Distribution**
Known from Namibia, South Africa and Zimbabwe.

*Phlegra simplex* Wesołowska & Russell-Smith, 2000


**Material examined**

**Distribution**
Hitherto known only from the type locality in northern Tanzania, it is the first record from Zimbabwe.

*Phlegra tenella* Wesołowska, 2006


**Material examined**
DISTRIBUTION
Known only from Namibia.

*Plexippus lutescens* sp. n.
Figs 69-70, 94

DIAGNOSIS
Distinguished from all other *Plexippus* by having the bulb without posterior lobe and very delicate keel on prolateral edge of bulb (strongly sclerotized in other species).

ETYMOLOGY
The name refers to light colour of the male bulb.

MATERIAL EXAMINED
Paratype: NAMIBIA, Otjozondjupa region (without precise locality), under stone, 1 male, X.2009, leg. M. FORMAN (MRAC).
Other material: together with holotype, 1 subadult male.

69-70. *Plexippus lutescens* sp. n., holotype: 69 - palpal organ, ventral view, 70 - palpal organ, lateral view
DESCRIPTION
Male. General appearance as in Fig. 94. Carapace oval, dark brown, clothed in dark hairs, long brown bristles on eye field. White hairs form median stripe beginning from centre of eye field and running to posterior edge of carapace, two white stripes on lateral slopes, dark narrow line along lateral margins of carapace. Fovea clearly visible. Anterior eyes encircled with small scales, fawn from above, white from below. Chelicerae brown, unidentate. Labium and endites brownish with yellow tips, sternum brown. Abdomen ovoid, dark, brownish russet with slightly lighter median streak laterally framed by narrow whitish lines (Fig. 94) (in paratype abdomen with wide light streak, covered with orange hairs). Colourless hairs cover abdomen, among them long brown bristles. Venter orange, tinged with grey, large triangular patch in centre with three longitudinal darker lines. Spinnerets brown. Legs brown with orange tarsi. Leg hairs and spines dark, some whitish scales on femora. Pedipalps with single short tibial apophysis (Fig. 70). Bulb without lateral lobe (present in other species in the genus), very light, yellowish white. Embolus thin, delicate serrate keel on prolateral side of bulb (Fig. 69).
Female unknown.

DISTRIBUTION
Known from Namibia and Zimbabwe.

Plexippus tsholotsho sp. n.
Figs 71-72

DIAGNOSIS
The epigyne with notches on sides, as in Plexippus paykulli (Audouin, 1826), but differs by having meandering seminal ducts and remarkable sclerotization of the vicinity of gonopores.

ETYMOLOGY
The name is a noun in apposition, referring to the type locality.

MATERIAL EXAMINED

DESCRIPTION
Measurements. Cephalothorax: length 4.0, width 3.1, height 1.7. Abdomen: length 5.2, width 3.7. Eye field: length 1.8, anterior and posterior width 2.3.
Male unknown.
Female. Large spider. Carapace oval, dark brown, near eyes black, foveal area lighter, brownish orange. Whole carapace covered with thin brown hairs, long brown bristles near eyes, fawn scales encircle eyes of anterior row. Clypeus dark. Mouth parts and sternum brown. Abdomen ovoid, dark brown with wide light median streak, the streak clothed in reddish hairs. Scarce long brown bristles on abdominal dorsum. Venter tinged with grey, clothed in dark hairs. Spinnerets greyish brown. Legs brown with orange tarsi. Leg hairs and spines dark. Epigyne large, with notches on sides (Fig. 72). Central part with dish depression, plugged with waxy secretion. Vicinity of gonopores very strongly sclerotized, with large “wings”, seminal ducts meandering (Fig. 72).

**Distribution**
Known only from the type locality in Zimbabwe.

---

71-72. *Plexippus tsholotsho* sp. n., holotype: 71 - epigyne, 72 - internal structure of epigyne

---

*Pseudicius matabelensis* sp. n.
Figs 73-78

**Diagnosis**
The male is distinctive in having the tibial apophysis extremely long (equal to the length of cymbium). The female is recognizable by the position of epigynal pockets which are located very anteriorly.
ETYMOLOGY
The name is derived from the region in Zimbabwe, in which the type locality is placed.

MATERIAL EXAMINED
Holotype: male, ZIMBABWE, Tsholotsho, 15°45’S:29°44’E, 3500 m a.s.l., 14-17.IX.2007, leg. L. SIBANDA (MRAC).

73-78. Pseudicius matabelensis sp. n., paratypes: 73 - first leg, 74 - palpal organ, ventral view, 75 - palpal organ, lateral view, 76 - palpal organ, 77 epigyne, 78 - internal structure of epigyne

**Description**

Measurements (male/female). Cephalothorax: length 1.6-1.9/1.7, width 1.1-1.3/1.2, height 0.5-0.6/0.5. Abdomen: length 1.7-2.3/2.0, width 1.0-1.3/1.3. Eye field: length 0.8-0.9/0.7, anterior width 0.9/1.0, posterior width 1.0/1.1.

Male. Small spider. Carapace oval, flat, dark brown with almost black eye field. Ocular area with metallic shine. Colourless delicate hairs cover carapace, near eyes some longer thin bristles. Anterior eyes framed below with very small light scales. Chelicerae large, unidentate. Mouth parts and sternum brown. Stridulatory apparatus present (leg-carapace type). Abdomen elongated, olive-brownish with traces of two lateral light stripes, small anterior scutum on dorsum, clothed in delicate hairs. Venter and spinnerets dark brown. First pair of legs dark brown, very stout, their tibiae strongly swollen (Fig. 73) with short thick spine on prolateral surface distally. Hairs on leg I scarce, long, thin. Other legs light brown, only lateral surface of femora darker. Pedi-palps brown. Tibial apophysis single, straight, extremely long (Figs 74-76).

Female. Similar to male, white hairs on clypeus. First leg not stouter, its spines as in male. Epigyne elongated with large depression and two pockets placed anteriorly, far from depression (Fig. 77). Internal structure as in Fig. 78, receptacles strongly sclerotized, elongated, situated along length of body.

![Abdominal pattern](image1.png)
![Epigyne](image2.png)
![Internal structure of epigyne](image3.png)

79-81. *Pseudicius solitarius*: 79 – abdominal pattern, 80 - epigyne, 81 - internal structure of epigyne
NEW SPECIES AND NEW RECORDS OF JUMPING SPIDERS

DISTRIBUTION
Known from Namibia and Zimbabwe.

**Pseudicius solitarius** HADDAD & WESOŁOWSKA, 2011

*Fig. 79-81*

*Pseudicius solitarius* HADDAD & WESOŁOWSKA 2011: 117.

**MATERIAL EXAMINED**

NAMIBIA, Heretoland East, Eiseb river, 20°38’S:20°05’E, 2 females, 17.VI.1988, leg. E. MARAIS (SMN 41895); Etosha Pan, 18°36’S:16°14’E, 1 female, 1.V.1987, leg. MARAIS & IRISH (SMN 41310); Bethanien distr., Aukan, 26°49’S:16°56’E, pitfall trap, 1 female, 7-8.VIII.1990, leg C. ROBERTS & E. MARAIS (SMN 41936).

**DESCRIPTION**

Measurements. Cephalothorax: length 1.9, width 1.2, height 0.6. Abdomen: length 2.4, width 1.3. Eye field: length 0.9, anterior width 1.0, posterior width 1.1.

Female. Carapace oval, very flat, brown with black eye field. Greyish hairs on carapace, brown bristles near eyes, row of stiff long bristles on lateral sides of carapace (stridulatory apparatus). Mouth parts and sternum brown. Abdomen elongated, greyish brown with pattern composed of few pairs of light patches and light band on anterior margin stretches on sides (Fig. 79), venter light. Spinnerets brown. Legs light brown with darker patches, first pair slightly darker than others. Epigyne oval, gonopores placed laterally (Fig. 80). Internal structure of epigyne as in Fig. 81.

**DISTRIBUTION**

Known from South Africa, in Namibia recorded for the first time.

**Thyene leighi** PECKHAM & PECKHAM, 1903

*Fig. 82-84*


**MATERIAL EXAMINED**


**DESCRIPTION**


Male. Large spider. Carapace oval, broadest posteriorly, light brown, darker at margins; with two white streaks laterally and median broad band on thoracic part. Eyes
surrounded by black rings, some long brown bristles in vicinity of anterior eyes. White scale-like hairs form transverse strip on ocular area behind anterior eyes and two bands laterally from eye field. Chelicerae, clypeus and labium dark brown, endites dark with whitish tips. Sternum and coxae yellowish. Abdomen elongated, narrow, yellowish olive with five pairs of black patches, between them small light spots; in subadult specimens lighter, yellow with two longitudinal brownish streaks laterally. Dorsum of abdomen covered sparsely with brown hairs, venter light yellow. Spinnerets light. First pair of legs longer and thicker than others, brown with almost black femora, in subadult specimens lighter, femora decorated with black transverse stripes on ventral and prolateral surfaces. Legs II-IV yellowish, their femora tinged with grey. Leg hairs and spines brown. Pedipalps brownish, cymbium with row of thick sharp setae on retrolateral edge (Figs 83, 84). Tibial apophysis broad, serrate (Fig. 84). Tegulum rounded, embolus very long, encircling tegulum four times (Fig. 82), initial part of embolus armed with a few small teeth (Fig. 83).

**Distribution**

Known from South Africa and Zimbabwe.

82-84. *Thyene leighi*: 82 - palpal organ, ventral view, 83 - palpal organ, lateral view, 84 - palpal organ, dorsal view

**Acknowledgements**

My thanks go to Meg Cumming, Martin Forman, Charles Haddad and Anthony Russell-Smith for providing specimens. The curators of the institutions listed above are acknowledged for the access to the collections.
85-88. 85 - Cembalea hirsuta, lateral view, 86 - Dendryphantes sanguineus, female, dorsal view, 87 - ditto, ventral view, 88 - Heliophanus lesserti, lateral view
REFERENCES


