

***Afropesa*, a new spider genus from South Africa (Araneae: Entypesidae)**

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ABSTRACT

A new mygalomorph spider genus, *Afropesa* n. gen., is established for three South African species: the type species *A. schoutedeni* (Benoit, 1965) n. comb., transferred here from *Entypesa* Simon, 1902, and two newly described congeners, *A. gauteng* n. sp. and *A. schwendingeri* n. sp. The new genus differs from other genera of the Entypesidae by a unique set of diagnostic characters, including a flanged embolus and the spermathecae with wide bases and lengthened distal lobes. The three included species can be distinguished from each other by a shape of the male tibia and metatarsus I, as well as by the structure of the embolus and configuration of the spermathecae.

KEYWORDS: Araneae, Mygalomorphae, Entypesidae, Afrotropics, South Africa, biodiversity, new combination, new genus, new species, spiders, systematics, taxonomy.

INTRODUCTION

Until recently, the spider genus *Entypesa* Simon, 1902 has been considered to encompass only three poorly known species: *E. nebulosa* Simon, 1902 (the type species of the genus); *E. annulipes* (Strand, 1907) and *E. schoutedeni* Benoit, 1965; the first two from Madagascar and the last one from South Africa. However, the description of four new species (Zonstein 2018) increased the composition of the genus to seven (World Spider Catalog 2020), later this number was decreased to six by the designation of *E. annulipes* as *nomen dubium* (Nentwig *et al.* 2020). Recently, *Entypesa* together with two related genera, *Hermacha* Simon, 1889 and *Lepthercus* Purcell, 1902, has been transferred from the Nemesiidae Simon, 1889 to a newly established family Entypesidae (Opatova *et al.* 2020).

During the studies conducted by Zonstein since 2010 and Ríos-Tamayo since 2018, a reanalysis of the type specimens and specimens referred to *E. nebulosa* and *E. schoutedeni* has been made revealing important differences between both species. The detail examination has demonstrated that these two species belong to different genera. While the former remains to be the type species of the speciose Madagascan genus *Entypesa*, the latter represents a new genus restricted to the southern part of the mainland Africa. Both morphotypes show differences in the structure of the palpal tibia, cymbium, copulatory bulb, tibia and metatarsus I, intercheliceral tumescence and a typical configuration of the spermathecae.

The present publication is devoted to the description of *Afropesa* n. gen. and the included species. These spiders are known as small series of males and females collected in the Gauteng and Limpopo provinces of South Africa and are kept in the spider collection of the National Collection of Arachnida, Pretoria, South Africa, the Royal Museum for Central Africa in Tervuren, Belgium and the Muséum d'Histoire naturelle, Genève, Switzerland. The diagnoses and the illustrated descriptions of the new genus with two new species, as well as a redescription of the type species, are given below.

MATERIALS AND METHODS

The types and the comparative material used in this study were borrowed from the following spider collections:

AMNH	American Museum of Natural History, New York, USA;
CAS	California Academy of Sciences, San Francisco, USA;
FMNH	Field Museum of Natural History, Chicago, USA;
MHNG	Muséum d'Histoire naturelle, Genève, Switzerland;
MNB	Museum für Naturkunde, Humboldt Universität, Berlin, Germany;
MNHN	Musée national d'Histoire naturelle, Paris, France;
NCA	National Collection of Arachnida, Pretoria, South Africa;
NMSA	KwaZulu-Natal Museum, Pietermaritzburg, South Africa;
NMBA	National Museum, Bloemfontein, Free State, South Africa;
RMCA	Royal Museum for Central Africa, Tervuren, Belgium;
SAMC	Iziko Museums of South Africa, Cape Town, South Africa.

The following comparative material has been involved in the research:

Entypesa Simon, 1902: all five recognized and about 40 yet undescribed species deposited in AMNH, CAS, FMNH, MNHN, MHNG, and RMCA (including the corresponding types of the described congeners).

Lepthercus Purcell, 1902: all 11 hitherto known species deposited in NCA, NM, NMBA, and SAMC (including the corresponding types).

Hermacha Simon 1889: all species from South Africa and the type species of the genus from Mozambique deposited in MNB, MNHN, MRAC, NCA, NMBA, and SAMC.

Photographs were taken using a Zeiss Discovery V20 stereomicroscope with a Canon PowerShot G9 camera, or using a Canon EOS 500D camera with a Canon EF 100 mm f/2.8 macro lens for the totals, and prepared using the Helicon Focus 6.3.2 Pro (<http://www.heliconsoft.com>). Dissected vulvae, after maceration in the 10 % potassium hydroxide aqueous solution and usually after exposure for a few minutes in the alcohol solution of Chlorazol Black, were illustrated being placed into a small Petri dish filled with the 85 % lactic acid.

Measurements were taken through the above stereomicroscope to an accuracy of 0.01 mm. All measurements are given in millimetres. Total body length includes chelicerae but not spinnerets. The diameter of the AME is usually given as the

diameter of the sharply edged AME circle (the ‘pupil’). When the AME cornea is well-separated and elevated and its diameter can be measured, the corresponding data follow in brackets. Any eye interdistances counting this parameter are also given in brackets. The length of the sternum was measured along the straight line between the posterior tip of the sternum and the hindmost part of the labium. Lengths of leg and palp segments were measured on the dorsal side, and lengths of spinneret segments on the ventral side, from the midpoint of the anterior margin to the midpoint of the posterior margin.

The following abbreviations are used in the text: ALE – anterior lateral eye(s), AME – anterior median eye(s), d – dorsal, p – prolateral, pd – prodorsal, pv – proventral, PLE – posterior lateral eye(s), PLS – posterior lateral spinneret(s), PME – median lateral eye(s), PMS – posterior median spinneret(s), PTC – paired tarsal claw(s), r – retrolateral, rd – retrodorsal, rv – retroventral, v – ventral.

TAXONOMY

Family Entypesidae Bond, Opatova & Hedin, 2020

The spider family Entypesidae has been recently established to accommodate three genera previously listed in the Nemesiidae: *Entypesa* Simon, 1902, *Hermacha* Simon, 1889, and *Lepthercus* Purcell, 1902 (Opatova *et al.* 2020). All known entypesids are distributed only in the southernmost part of the Afrotropical Region (World Spider Catalog 2020); this being also the case of the fourth genus of the family, described below.

Genus *Afropesa* n. gen.

LSID: urn:lsid:zoobank.org:act:B96D8B0B-D590-49E2-981B-E133344E2B78.

Type species: *Entypesa schoutedeni* Benoit, 1965 (Figs 1–18), by present designation.

Etymology: *Afropesa* is a combination of the prefix *Afro-* (i.e., African, in reference to the mainland Africa) and the genus name *Entypesa*. The gender is feminine.

Diagnosis: Males and females of *Afropesa* gen. n. can be distinguished from those in other genera of the Entypesidae in having the following unique set of the diagnostic characters:

- (a) tibia I normal or thick (Figs 5, 23, 24, 41, 42), generally thin and elongated in *Entypesa* (Figs 54–59), normal in *Hermacha* and *Lepthercus dregei* group and incrassate in *Lepthercus haddadi* group);
- (b) the presence of a retroventral distal megaspine on tibia I (usually on a low mound: Figs 5, 23; similar to that in *Hermacha* and *Entypesa*, cf. raised apophysis with a distal megaspine in *Lepthercus*), sometimes the sessile megaspine is weakly developed (Figs 41, 42);
- (c) metatarsus I with or without a small knob (Figs 5–7, 23, 24, 41, 42 cf. absent in *Hermacha*, generally with a cuticular retrolateral process, or tumescence, or unmodified in *Entypesa* (Figs 54–59), with a basal prolateral tumescence in

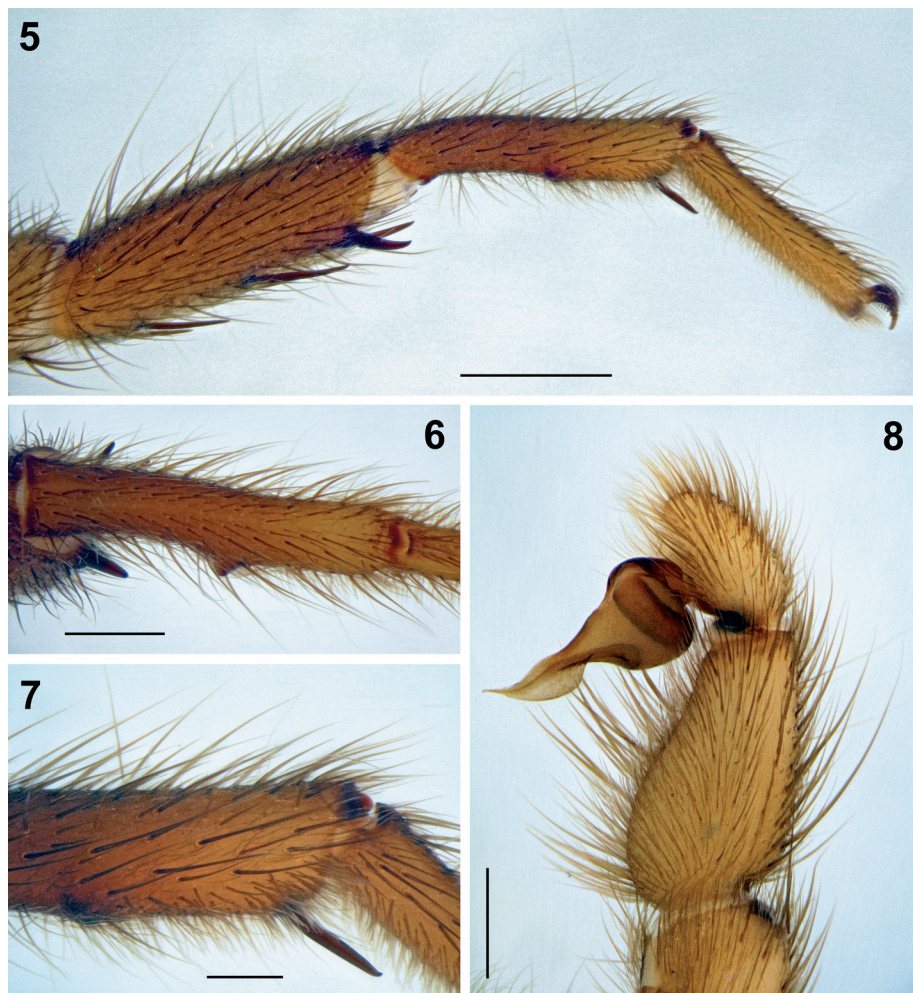


Figs 1–4: *Afropesa schoutedeni* (Benoit, 1965), n. comb., male NCA 2008/4971 (1) and holotype male RMCA-ARA-127592 (2–4): (1) habitus, dorsal; (2, 4) cephalothorax, dorsal and ventral; (3) eye tubercle, dorsal. Scale bars: Fig. 1 = 5 mm, Fig. 2 = 1 mm, Fig. 3 = 0.25 mm; Fig. 4 = 0.5 mm.

Lepthercus dregei species group, or with blunt spinules in *Lepthercus haddadi* group);

- (d) palpal tibia with the base moderately developed (Figs 8, 25, 43), similar to *Lepthercus dregei* species group, cf. strongly incrassate in *Lepthercus haddadi*

- group, mostly subcylindrical in *Hermacha* and *Entypesa* (Figs 60–66; Dippenaar-Schoeman 2002, fig. 58h);
- (e) palpal tibia with spiniform setae prolaterally (as in Figs 9, 10, similar to *Lepthercus dregei* group, absents in *Lepthercus haddadi* group, strong spines proventral and retroventral in *Hermacha* and *Entypesa*; see Figs 60–66);
- (f) cymbium short (Figs 8, 11, 25, 43, similar to *Lepthercus* and *Hermacha*, cf. moderately long to elongate in *Entypesa*; as in Figs 60–66) without spines



Figs 5–8: *Afropesa schoutedeni* (Benoit, 1965), n. comb., holotype male RMCA-ARA-127592: (5) tibia and metatarsus I, retrolateral aspect; (6, 7) structure of metatarsus I, dorsal and retrolateral; (8) distal segments of pedipalp, showing palpal organ, retrolateral. Scale bars: Fig. 5 = 1 mm, Figs 6, 8 = 0.5 mm, Fig. 7 = 0.25 mm.

- (similar to *Lepthercus*, spines present or not in *Hermacha* and *Entypesa*; see Figs 60–66);
- (g) copulatory bulb with developed flanges (Figs 8–11, 25, 27–30, 43–45 cf. small keels or absent in *Entypesa* (the most distributed variants as shown in Figs 60–66), *Lepthercus* and *Hermacha*);
- (h) spermathecae with a wide base and elongate or globular distal lobes (Figs 17, 35, 51, moderate to long stalks and small globular distal lobes in *Entypesa* (Figs 67–72), small with short stalks in *Lepthercus*, simple without stalks in *Hermacha*).



Figs 9–12: *Afropesa schoutedeni* (Benoit, 1965), n. comb., holotype male RMCA-ARA-127592, palpal organ (9–11) and spinnerets (12) in ventral (9), retroventral (10), retrolateral (11) and lateral (12) aspects, respectively. Scale bars: Figs 9–11 = 0.25 mm, Fig. 12 = 1 mm.

Description: Medium-sized (10–20 mm) spiders. Cephalothorax and legs covered with short bristles; cephalothorax with pubescence and disperse setae. Abdomen covered with short black hairs, dorsally and laterally with a fairly spotted pattern. Clypeus narrow. Ocular tubercle raised, darkened and well defined, wider than long. Fovea short and procurved (similar to *Lepthercus*, and *Entypesa*, procurved in *Hermacha*). Rastellum absent. Serrula present, well visible (similar to *Entypesa*, and *Lepthercus*, absent in *Hermacha*). Intercheliceral tumescence small and pallid (similar to *Hermacha*, well-marked in other genera); present in males, absent in females. Labium without cuspules, maxillae with numerous cuspules on the posterior inner surface; labiosternal sigilla fused and well defined. Sternum longer than wide, covered with sparse black hairs, with posterior sigilla marginal and fairly well defined.

Leg formula 4132; all legs sparsely covered with hairs. Tibia I of male unmodified or swollen, without spur; armed with retroventrodistal megaspine, sometimes on low mound (Figs 5, 23, 41, 42), similar to *Hermacha* and *Entypesa*, raised apophysis with distal megaspine in *Lepthercus*). Metatarsi I with or without a small knob. Cymbium short, without apical spines. Palpal tibia with the base moderately developed, with scarce spiniform setae. Scopula thin and moderately dense: entire on distal metatarsi I–II; entire on tarsus I; entire or narrowly divided on tarsus I; sparse and widely divided on tarsus III; vestigial if present on tarsus IV. Trichobothria filiform, arranged in two convex rows on tibiae and one fairly straight line on metatarsi and tarsi. Metatarsal preening combs present on legs II–IV (absent in *Hermacha*). Copulatory bulb with a moderate long and bent embolus, gradually tapering to apex with flanges. Spermathecae: two, with a wide basal portion and elongate or globular distal lobe.

Species included: *Afropesa schoutedeni* (Benoit, 1965) n. comb., *A. gauteng* n. sp. and *A. schwendingeri* n. sp.

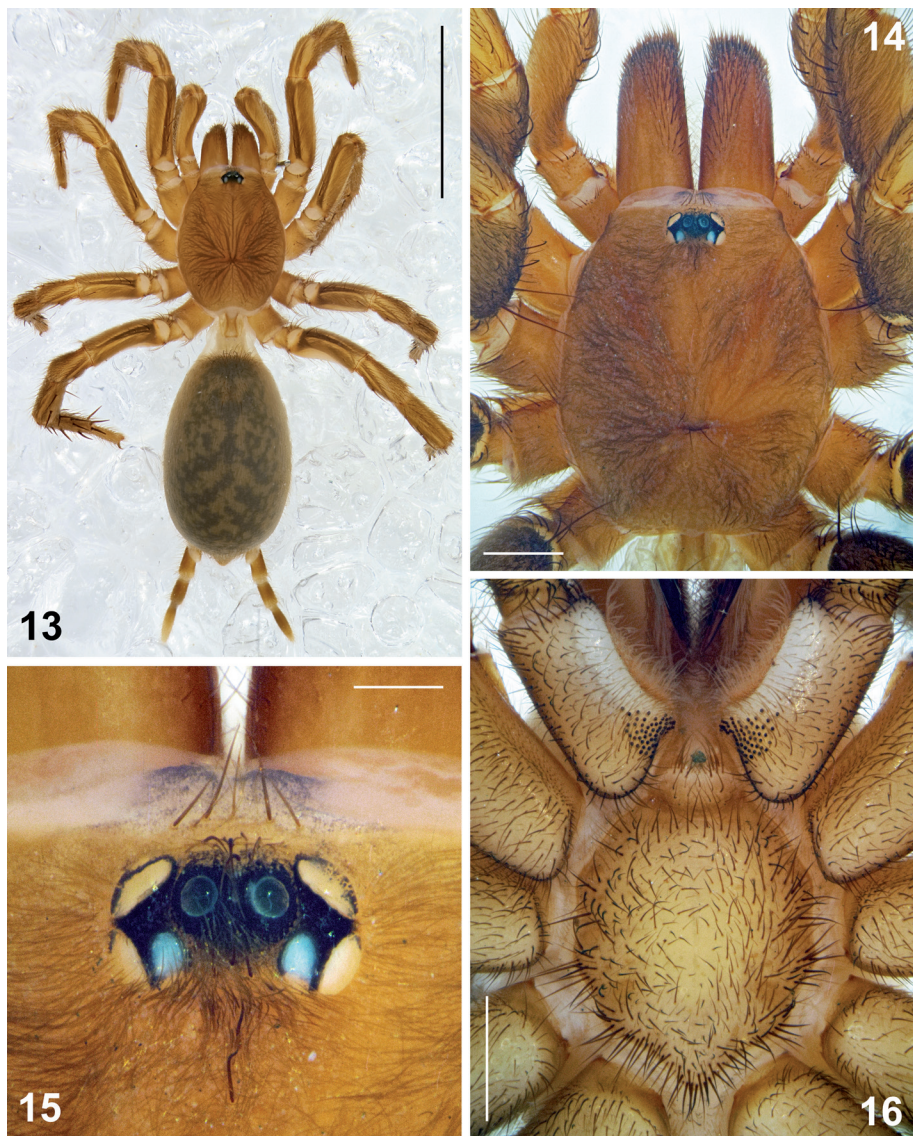
Afropesa schoutedeni (Benoit, 1965), **n. comb.**

(Figs 1–18, 53)

Entypesa schoutedeni Benoit 1965: 261, figs 2–7 (♂♀); Raven 1983: 552 (partially, only the types – see Notes below), 1985: 86, fig. 41 (♂); Dippenaar-Schoeman 2002: 94; Foord *et al.* 2008: 170; Zonstein & Marusik 2012: 78, 84, figs 3, 22 (♂); Zonstein 2018: 478, figs 51, 52 (♂).

Diagnosis: Males of *A. schoutedeni* differ from those of *A. schwendingeri* n. sp. and *A. gauteng* n. sp. in having a short unmodified tibia I with a normally developed sessile megaspine in combination with a relatively short metatarsus I provided with a retrolateral knob (vs. a long unmodified tibia I with a weakly differentiated megaspine and a long metatarsus I lacking a knob in the holotype male of *A. schwendingeri* n. sp., and vs. a swollen tibia I with the megaspine on a low mound and a modified metatarsus I with a ventral tumescence in males of *A. gauteng* n. sp.). Among the congeners, males of *A. schoutedeni* possess the longest palpal tibia, but the shortest distal embolus (Figs 8–11 cf. Figs 25, 27–30, 43–45). The conspecific

females can be distinguished from female congeners by the spermathecae with moderately long and spiraled stalks and clavate receptacular heads (vs. weakly twisted stalks in *A. schwendingeri* and sessile elongate heads in *A. gauteng* n. sp.; Fig. 17 cf. Figs 35 and 51).



Figs 13–16: *Afropesa schoutedeni* (Benoit, 1965), n. comb., paratype female RMCA-ARA-127593: (13) habitus, dorsal; (14, 16) cephalothorax, dorsal and ventral; (15) eye tubercle, dorsal. Scale bars: Fig. 13 = 5 mm, Figs 14, 16 = 1 mm, Fig. 15 = 0.25 mm.

Description: Male (holotype). Total length about 10.00 (abdomen separated from cephalothorax). Habitus as in Fig. 1.

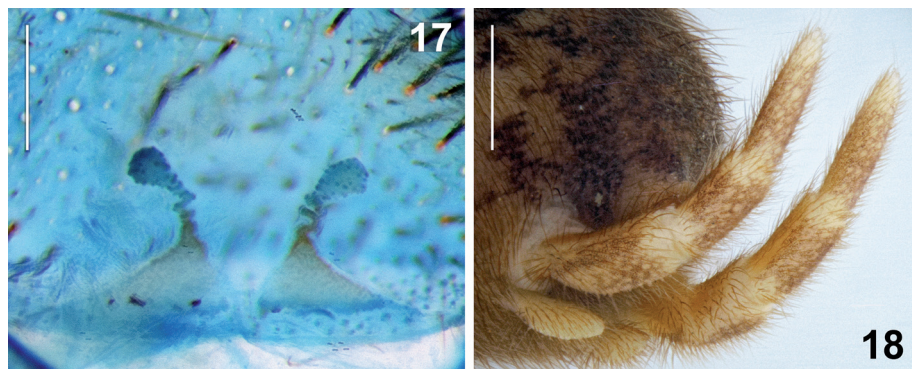
Colour in alcohol: carapace, chelicerae, most part of palps and legs medium ochre brown, with tibia and proximal half of metatarsus I slightly darker; labium, sternum, maxillae and coxae I–IV pale yellowish brown; eye tubercle blackish brown; abdomen yellowish brown, dorsally and laterally with darker brown chevron-like pattern, mottled posteriorly; spinnerets uniformly pale yellowish brown.

Cephalothorax dorsally and ventrally as in Figs 2 and 4, respectively. Carapace 3.76 long, 3.04 wide. Eye tubercle as in Fig. 3. Eye diameter and interdistances: AME 0.11(0.15), ALE 0.21, PLE 0.20, PME 0.13, AME–AME 0.09(0.05), AME–ALE 0.06(0.04), ALE–PLE 0.04, PLE–PME 0.03, PME–PME 0.23. Chelicerae without rastellum. Chelicerai furrow with 8 promarginal teeth and ca. 30 tiny mesobasal denticles. Male interchelicerai tumescence small and weakly defined. Labium 0.32 long, 0.64 wide. Sternum 1.98 long, 1.66 wide. Maxillae each with about 50 very small cusps arranged in wide triangular area. Maxillary serrula well visible under light microscope at 100 \times magnification.

Palp and leg structures. Tibia and metatarsus I as in Fig. 5; details of metatarsus I as in Figs 6, 7. Spines (cymbium and tarsi I–IV aspinose): Palp: femur d1–1–1–1–1, pd0–0–1; patella p1; tibia p0–1–1, v0–1–2. Leg I: femur d1–1–1–1, pd0–0–1; patella p1; tibia p1–1, pv1–1–2, rv1–1–M; metatarsus v0–1–1. Leg II: femur d1–1–1–1, pd0–0–1; patella p1; tibia p1–1, v2–2–3; metatarsus p1–1, v2(1)–2–3. Leg III: femur d1–1–1–1–1, pd1–1–1, rd1–1–1; patella p1–1, r1; tibia d1–1, p1–1, r1–1, v2–2–3; metatarsus d1–1–1, p1–1–1, r1–1–1, v2–2–3. Leg IV: femur d1–1–1–1, pd1–1–1, rd0–1–1; patella r1; tibia d1–1–0, p1–1, r1–1, v2–2–3; metatarsus p1–1–1–1, pd1–1–1, r1–1–1–1, rd1–1–1, v2–2–3. Trichobothria: 2 rows of 8–10 each on tibiae, 15–17 on metatarsi, 10–12 on tarsi, 9 on cymbium. Metatarsal preening combs present on metatarsi II (one), III (two) and IV (two). Scopula thin, moderately sparse and as long as 0.7–0.8 width of segment: entire and distal on metatarsi I–II, entire on tarsus I, narrowly divided on tarsus II; widely divided on tarsi III and IV. PTC I–IV with 9–10 teeth on each margin. Leg measurements:

	Palp	I	II	III	IV
Femur	1.72	2.93	2.54	2.34	2.99
Patella	0.93	1.71	1.53	1.29	1.64
Tibia	1.01	1.94	1.65	1.46	2.21
Metatarsus	—	1.97	1.76	2.15	3.10
Tarsus	0.64	1.43	1.41	1.45	1.61
Total	4.30	9.98	8.89	8.69	11.55

Distal segments of palp and copulatory organ as in Figs 8–11. Tegulum pear-shaped. Embolus proximally enclosed between two flattened structures: long ventral keel and raised dorsal flange. Distal portion of embolus moderately short, curved and tapering to apex.



Figs 17, 18: *Afropesa schoutedeni* (Benoit, 1965), n. comb., female paratype RMCA-ARA-127593: (17) spermathecae, dorsal (inside); (18) spinnerets, ventrolateral. Scale bars: Fig. 17 = 0.5 mm, Fig. 18 = 1 mm.

Spinnerets (Fig. 12). PMS: length 0.49, diameter 0.20. PLS: maximal diameter 0.37; length of basal, medial and apical segments 0.82, 0.66, 1.03; total length 2.51; apical segment digitiform.

Female (paratype). Total length 12.10. Habitus as in Fig. 13.

Colour in alcohol: generally, as in male, but legs I–IV uniformly coloured.

Cephalothorax dorsally and ventrally as in Figs 14 and 16, respectively. Carapace 3.94 long, 3.19 wide. Eye tubercle as in Fig. 15. Eye diameter and interdistances: AME 0.12(0.17), ALE 0.23, PLE 0.19, PME 0.14, AME–AME 0.09(0.04), AME–ALE 0.06(0.04), ALE–PLE 0.03, PLE–PME 0.03, PME–PME 0.26. Chelicerae without rastellum as in male. Cheliceral furrow with 7 promarginal teeth and 20–25 small mesobasal denticles. Labium 0.39 long, 0.72 wide. Sternum 2.03 long, 1.80 wide. Maxillae each with 55–60 small cuspules arranged as in male. Maxillary serrula well visible under light microscope at 100× magnification.

Palp and leg structures. Spines (all femora with 1 basodorsal spine and 3–4 dorsal bristles alongside midline; palpal patella, patellae I–II and tarsi I–IV aspinose): Palp: femur pd1; tibia p0–1, v2–2–3(2); tarsus v2–0–0. Leg I: femur pd1; tibia p0–1(0), v1–1–2; metatarsus v2–1–2. Leg II: femur pd1; tibia p0–1, v1–1–2; metatarsus v2–2–2. Leg III: femur rd0–0–1; patella p1–1, r1; tibia p1–1, r1–1, v2–2–3; metatarsus p1–1–1, pd1–1–1, r1–1–1, rd1–1–1, v2–2–3. Leg IV: femur rd0–0–1; patella r1; tibia p0–1, r1–1, v2–2–3; metatarsus p1–1–1–1, pd1–1–1–1, r1–1–1, rd1–1–1, v2–2–3. Trichobothria: 2 rows of 9–10 each on tibiae, 13–16 on metatarsi, 10–12 on tarsi, 9 on palpal tarsus. Metatarsal preening combs as in male. Scopula thin and moderately sparse as in male but shorter (as long as 0.4–0.5 width of segment): entire on metatarsi I–II, palpal tarsus, divided by single row of setae on tarsus I, narrowly divided on tarsus II, widely divided and mixed with setae on tarsus III, vestigial and mixed on tarsus IV. PTC I with 6–7 teeth on each margin. Palpal claw with 6 promarginal teeth. Leg measurements:

	Palp	I	II	III	IV
Femur	1.91	2.55	2.49	2.20	2.86
Patella	1.10	1.63	1.47	1.38	1.66
Tibia	1.17	1.74	1.47	1.33	2.02
Metatarsus	—	1.51	1.46	1.92	2.65
Tarsus	1.39	1.12	1.12	1.15	1.34
Total	5.57	8.55	8.01	7.98	10.53

Spermathecae (Fig. 17). Each paired branch consists of wide basal part connected directly (i.e., without a stalk) with elongate distal lobe.

Spinnerets (Fig. 18). PMS: length 0.68, diameter 0.24. PLS: maximal diameter 0.41; length of basal, medial and apical segments 1.03, 0.72, 1.12; total length 2.87; apical segment digitiform.

Variation: Length of the carapace varies from 3.63–3.76 mm in males, and from 3.10–3.94 mm in females.

Holotype: ♂ **South Africa:** *Limpopo:* Soutpansberg Mts [22°59'S 29°45'E], no date, H. Schouteden (RMCA-ARA-127592). The holotype was found preserved in a good condition, with the abdomen, the left palp, and the right leg I from tibia to tarsus separated from the cephalothorax.

Paratype: 1♀, collected together with the holotype, with the same label data but stored in a good condition in a separate vial (RMCA-ARA-127593).

Additional material examined: **South Africa:** *Limpopo:* 1♂ Soutpansberg Mts, Mt Lajuma, 11.v.2004, M. Mafadza (NCA 2008/4971); 1♂ subad., 1♀, same data as the preceding but Lajuma Mt Retreat [23°02'20"S 29°25'50"E], 50 km W Louis Trichardt, 1300–1400 m, 1–2.iv.2001, P. Schwendinger (MHNG-ZA-01/02).

Distribution: The species is known only from the type locality.

Ecology: Two specimens from the Lajuma Mt Retreat have been collected, according to the label data, in the “montane evergreen forest”.

Notes: The specimens from KwaZulu-Natal Province deposited in RMCA (8♀, examined), which were mentioned and illustrated by Raven (1983) as belonging to *E. schoutedeni*, should be actually assigned to another entypesid taxon.

Afropesa gauteng n. sp.

(Figs 19–36, 53)

LSID: urn:lsid:zoobank.org:act:0C74D67C-F8E1-436E-B550-EE9C8C0DF126.

Etymology: The species name is a noun in apposition and refers to the name of the Gauteng province in South Africa, where the type series was collected.

Diagnosis: *Afropesa gauteng* n. sp. differs from males of the other two species in having a noticeable swollen tibia I and a bowed metatarsus I provided with a ventral knob (vs. a non-thickened tibia I in combination with either a laterally knobbed or a long unmodified metatarsus I). The dorsal embolic flange in *A. gauteng* n. sp. is noticeably shorter than in its both congeners (Figs 27–30 cf. Figs 9–11, 43–45). The conspecific female can be distinguished from other female congeners in having the spermathecae with the trapezoidal bases directly connected to the sessile

elongate receptacular heads (vs. triangular bases connected with fairly long stalks to noticeably shorter clavate heads in *A. schoutedeni* and *A. schwendingeri* n. sp.; Fig. 35 cf. Figs 17 and 51).

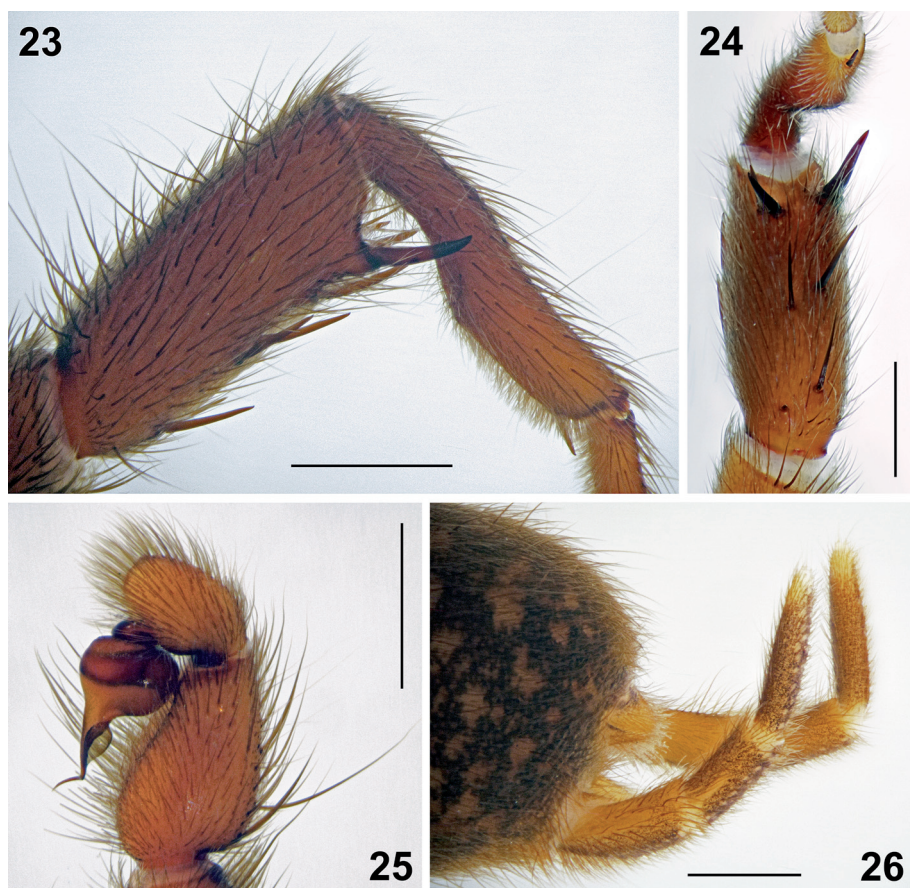


Figs 19–22: *Afropesa gauteng* n. sp., holotype male RMCA-ARA-154430/a: (19) habitus, dorsal; (20, 22) cephalothorax, dorsal and ventral; (21) eye tubercle, dorsal. Scale bars: Fig. 19 = 5 mm, Figs 20, 22 = 1 mm, Fig. 21 = 0.25 mm.

Description: Male (holotype). Total length 12.40. Habitus as in Fig. 19.

Colour in alcohol: carapace, chelicerae, most part of palps and legs medium ginger brown; femora I–IV dorsally and patella to metatarsus I darker brown; labium, sternum, maxillae and coxae I–IV paler yellowish brown; eye tubercle blackish brown; abdomen and PLS ventrally pale yellowish brown with a few irregular brownish marks, dorsally and laterally brown with paler yellowish brown spotted pattern; PMS uniformly pale yellowish brown.

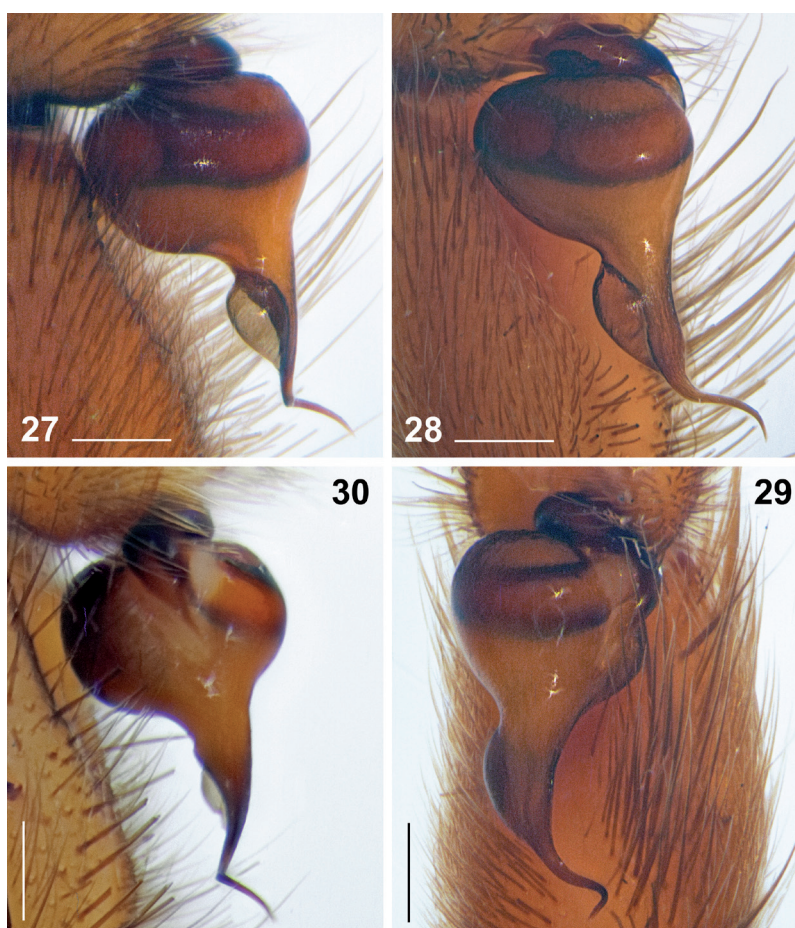
Cephalothorax dorsally and ventrally as in Figs 20 and 22, respectively. Carapace 4.81 long, 3.67 wide. Eye tubercle as in Fig. 21. Eye diameter and interdistances: AME 0.12(0.18), ALE 0.24, PLE 0.19, PME 0.16, AME–AME 0.09(0.03), AME–ALE 0.07(0.04), ALE–PLE 0.07, PLE–PME 0.03, PME–PME 0.24. Chelicerae



Figs 23–26: *Afropesa gauteng* n. sp., holotype RMCA-ARA-154430/a (23, 24, 26) and paratype RMCA-ARA-154430/b (25) males: (23, 24) tibia and metatarsus I, retrolateral and proventral aspects; (25) distal segments of pedipalp, showing palp organ, retrolateral; (26) spinnerets, lateral. Scale bars = 1 mm.

only with dense enlarged setae on anterodistal edge, true rastellar spines absent. Cheliceral furrow with 7 promarginal teeth and 25–30 heterogeneous (tiny to minute) mesobasal denticles. Male intercheliceral tumescence small, pallid and weakly defined oval area confined to proventrobasal cheliceral edge. Labium 0.33 long, 0.69 wide. Sternum 2.43 long, 1.96 wide. Maxillae each with 70–75 very small cuspules arranged in wide triangular area. Maxillary serrula well visible under light microscope at 100× magnification.

Palp and leg structures. Tibia and metatarsus I as in Figs 23, 24. Spines (cymbium and tarsi I–IV aspinose): Palp: femur d1–1–1–1–1, pd0–0–1; patella p1; tibia pv1–1–1. Leg I: femur d1–1–1–1–1, pd0–0–1; patella p1; tibia pv1–1–1; metatarsus



Figs 27–30: *Afropesa gauteng* n. sp., holotype RMCA-ARA-154430/a (27–29) and paratype RMCA-ARA-154430/b (30) males, palpal organ in retrodorsal (27), retrolateral (28), retroventral (29) and ventral (30) aspects. Scale bars = 0.25 mm.

v0–0–1. Leg II: femur d1–1–1–1, pd0–0–1; patella p1; tibia p1–1, v2–2–3; metatarsus p1–1, v3(2)–2–3. Leg III: femur d1–1–1–1, pd1–1–1, rd1–1–1; patella p1–1, r1–1(0); tibia d1(0)–1–1, p1–1, r1–1, v2–2–3; metatarsus p1–1–1, pd1–1–1, r1–1–1, rd1–1–1, v2–2–3. Leg IV: femur d1–1–1–1, pd1–1–1, rd0–1–1; patella r1; tibia d1–0–0, p1–1, r1–1, v2–2–3; metatarsus p1–1–1, pd1–1–0–2, r1–1–1, rd1–1–1–1, v3(2)–1–2–3. Trichobothria: 2 rows of 8–10 each on tibiae, 15–17 on metatarsi, 14–15 on tarsi, 12 on cymbium. Metatarsal preening combs present on metatarsi II (one), III (two) and IV (two). Scopula thin, moderately dense and as long as 0.5–0.6 width of segment: entire and distal on metatarsi I–II, entire on tarsi I–II, narrowly divided on tarsus III; widely divided on tarsus IV. PTC I–IV with 10–12 teeth on each margin. Leg measurements:

	Palp	I	II	III	IV
Femur	1.99	3.47	3.15	2.94	3.63
Patella	0.91	1.98	1.77	1.56	1.96
Tibia	1.27	2.41	1.97	1.83	2.69
Metatarsus	—	2.63	2.35	2.92	3.75
Tarsus	0.62	1.66	1.64	1.73	1.99
Total	4.69	12.15	10.88	10.98	14.02

Distal segments of palp and copulatory organ as in Figs 25, 27–30. Tegulum pole-flattened and pegtop-shaped. Embolus proximally funnel-shaped with shallow longitudinal furrow bordered retromarginally with slightly convex lenticular keel. Distal portion of embolus moderately long, bent and gradually tapering to apex.

Spinnerets (Fig. 26). PMS: length 0.56, diameter 0.24. PLS: maximal diameter 0.42; length of basal, medial and apical segments 0.99, 0.80, 1.28; total length 3.07; apical segment digitiform.

Female (paratype). Total length 14.30. Habitus as in Fig. 31.

Colour in alcohol: generally, as in male, but chelicerae chestnut brown and considerably darker than carapace, and legs I–IV uniformly coloured.

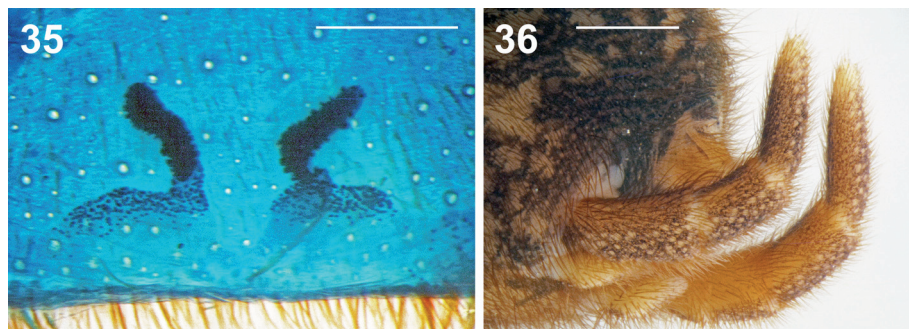
Cephalothorax dorsally and ventrally as in Figs 32 and 34, respectively. Carapace 5.14 long, 3.88 wide. Eye tubercle as in Fig. 33. Eye diameter and interdistances: AME 0.12(0.18), ALE 0.28, PLE 0.23, PME 0.19, AME–AME 0.12(0.06), AME–ALE 0.09(0.06), ALE–PLE 0.04, PLE–PME 0.04, PME–PME 0.27. Chelicerae without rastellum as in male. Cheliceral furrow with promarginal 7–8 teeth and about 30 heterogeneous mesobasal denticles. Labium 0.44 long, 0.86 wide. Sternum 2.54 long, 2.18 wide. Maxillae each with about 80 small cuspules arranged as in male. Maxillary serrula well visible under light microscope at 100× magnification.

Palp and leg structures. Spines (all femora with 1 basodorsal spine and 3–5 dorsal bristles alongside midline; palpal patella, patellae I–II and tarsi I–IV aspinose): Palp: femur pd1; tibia p1–1, v2–2–3; tarsus v2–0–0. Leg I: femur pd1; tibia p0–1, v1–1–3; metatarsus v2–2–0–1. Leg II: femur pd1; tibia p0–1, v1–1–3; metatarsus v2–2–2. Leg III: femur pd0–0–1, rd0–1–1; patella p1–1, r1(0); tibia d1–1, p1–1, r1–1(0), v2–2–3; metatarsus p1–1–1, pd1–1–1, r1–1, rd1–1–1, v2–2–3. Leg IV: femur rd0–0–1; patella r1; tibia p0–1, r1–1, v2–2–3; metatarsus p1–1–1–1, pd1–1–1–1,



Figs 31–34: *Afropesa gauteng* n. sp., paratype female RMCA-ARA-154430/b: (31) habitus, dorsal; (32, 34) cephalothorax, dorsal and ventral; (33) eye tubercle, dorsal. Scale bars: Fig. 31 = 5 mm, Figs 32, 34 = 1 mm, Fig. 33 = 0.25 mm.

r1–1–1, rd1–1–1, v2–1–2–3. Trichobothria: 2 rows of 9–10 each on tibiae, 11–14 on metatarsi, 12–14 on tarsi, 10 on palpal tarsus. Metatarsal preening combs as in male. Scopula entire on metatarsi I–II, palpal tarsus and tarsus I, narrowly divided on tarsus II, widely divided on tarsus III, absent on tarsus IV. PTC I with 8–9 teeth on each margin. Palpal claw with 6 promarginal teeth. Leg measurements:



Figs 35, 36: *Afropesa gauteng* n. sp., female paratype RMCA-ARA-154430/b: (35) spermathecae, dorsal (inside); (36) spinnerets, ventrolateral. Scale bars: Fig. 35 = 0.5 mm, Fig. 36 = 1 mm.

	Palp	I	II	III	IV
Femur	2.29	3.30	2.99	2.65	3.46
Patella	1.21	1.98	1.81	1.64	1.96
Tibia	1.46	2.13	1.83	1.64	2.53
Metatarsus	—	1.93	1.79	2.31	3.21
Tarsus	1.71	1.49	1.43	1.46	1.57
Total	6.67	10.83	9.85	9.70	12.73

Spermathecae (Fig. 35). Each paired branch consists of wide basal part connected directly (i.e., without a stalk) with elongate distal lobe.

Spinnerets (Fig. 36). PMS: length 0.71, diameter 0.31. PLS: maximal diameter 0.57; length of basal, medial and apical segments 1.16, 0.79, 1.30; total length 3.25; apical segment digitiform.

Variation: Length of the carapace varies from 4.09–4.81 mm in males, and from 4.48–5.14 mm in females.

Holotype: ♂ *South Africa:* *Gauteng:* near Magaliesburg, 25°59'S 27°33'E, ca. 1500 m, 2.iv.1976, F. Wanless & A. Russell-Smith (RMCA-ARA-154430/a). The holotype is the best preserved male in the entire series; however, resulting from a relatively long storage, body and legs are slightly macerated.

Paratypes: 2♂ 4♀, collected together with the holotype (RMCA-ARA-154430/b). The paratype series embraces both relatively well-preserved (somewhat macerated) and partially fragmented specimens.

Distribution: The species is known only from the type locality.

Ecology: Unknown.

Afropesa schwendingeri n. sp.

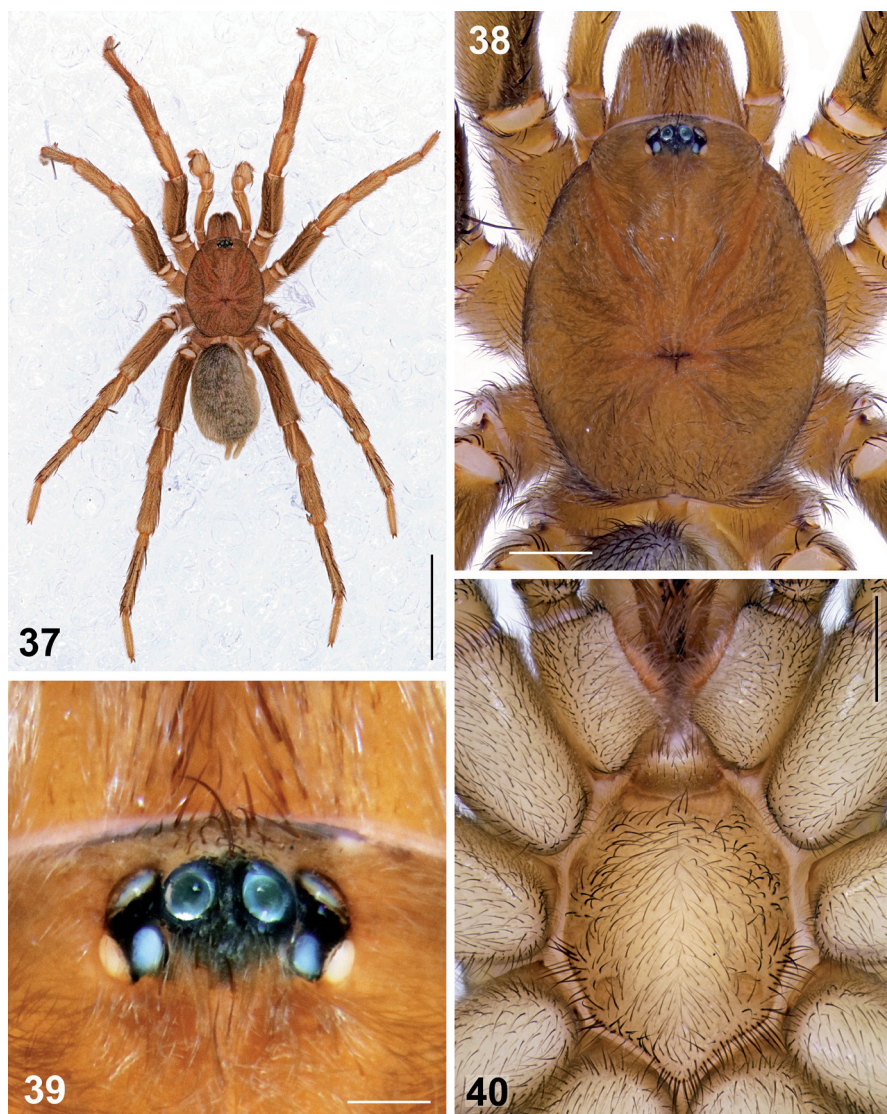
(Figs 37–53)

LSID: urn:lsid:zoobank.org:act:939CB3B2-B6E6-4EC7-90AC-6F00EB9FB1A5.

Etymology: The species is named after Dr Peter Schwendinger, a prominent Swiss specialist on the Mesothelae and the Mygalomorphae; the description is based on the material collected by him.

Diagnosis: The holotype male of *A. schwendingeri* n. sp. differs from males of both *A. schoutedeni* and *A. gauteng* n. sp. in having an underdeveloped megaspine on tibia

I, an unmodified metatarsus I lacking a knob, and a relatively shorter apical segment of PLS (vs. a well-defined megaspine, the presence of the metatarsal knob, and a longer apical segment of PLS in males of two latter species). Among the congeners, male of *A. schwendingeri* n. sp. possesses the longest though relatively low dorsal



Figs 37–40: *Afropesa schwendingeri* n. sp., holotype male MHNG-ZA-01/02: (37) habitus, dorsal; (38, 40) cephalothorax, dorsal and ventral; (39) eye tubercle, dorsal. Scale bars: Fig. 37 = 5 mm, Figs 38, 40 = 1 mm, Fig. 39 = 0.25 mm.

embolic flange as well as the longest distal embolus (Figs 43–45 cf. Figs 8–11, 25, 27–30). The conspecific female can be distinguished from other female congeners in having the spermathecae with moderately long and weakly twisted stalks and clavate receptacular heads (vs. spiraled stalks in *A. schoutedeni* and sessile elongate heads in *A. gauteng* n. sp.; Fig. 51 cf. Figs 17 and 35).

Description: Male (holotype). Total length about 11.45. Habitus as in Fig. 37.

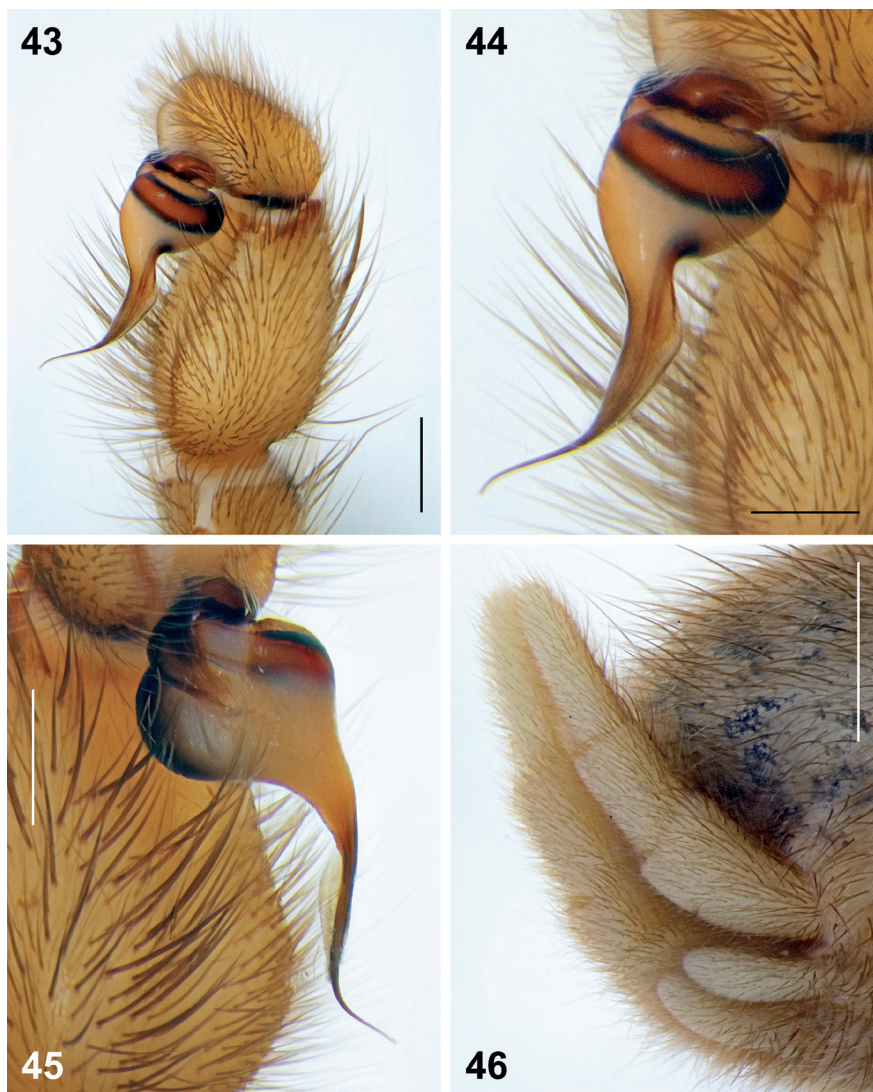
Colour in alcohol: carapace, chelicerae and femora I–IV dorsally yellowish brick-red, palps entirely and most part of legs I–IV yellowish orange, with tibia and proximal half of metatarsus I slightly darker; labium, sternum, maxillae and coxae I–IV pale yellowish orange; eye tubercle blackish brown; abdomen yellowish brown, dorsally and laterally with darker brown diffuse mottled pattern and weakly distinct chevrons; spinnerets almost uniformly pale yellowish brown with diffuse and weakly distinct darker brownish marks distributed only on their dorsal side.

Cephalothorax dorsally and ventrally as in Figs 38 and 40, respectively. Carapace 4.96 long, 3.86 wide. Eye tubercle as in Fig. 39. Eye diameter and interdistances: AME 0.15(0.21), ALE 0.23, PLE 0.16, PME 0.14, AME–AME 0.09(0.04), AME–ALE 0.08(0.05), ALE–PLE 0.05, PLE–PME 0.03, PME–PME 0.39. Chelicerae with 30–35 thickened setae on dorsodistal edge in front of fang base. Cheliceral furrow with 8–9 promarginal teeth and 25–30 tiny to minute mesobasal denticles. Male intercheliceral tumescence small and weakly defined. Labium 0.43 long, 0.82 wide. Sternum 2.47 long, 2.04 wide. Maxillae each with about 65 very small cusps arranged in wide triangular area. Maxillary serrula well visible under light microscope at 100× magnification.



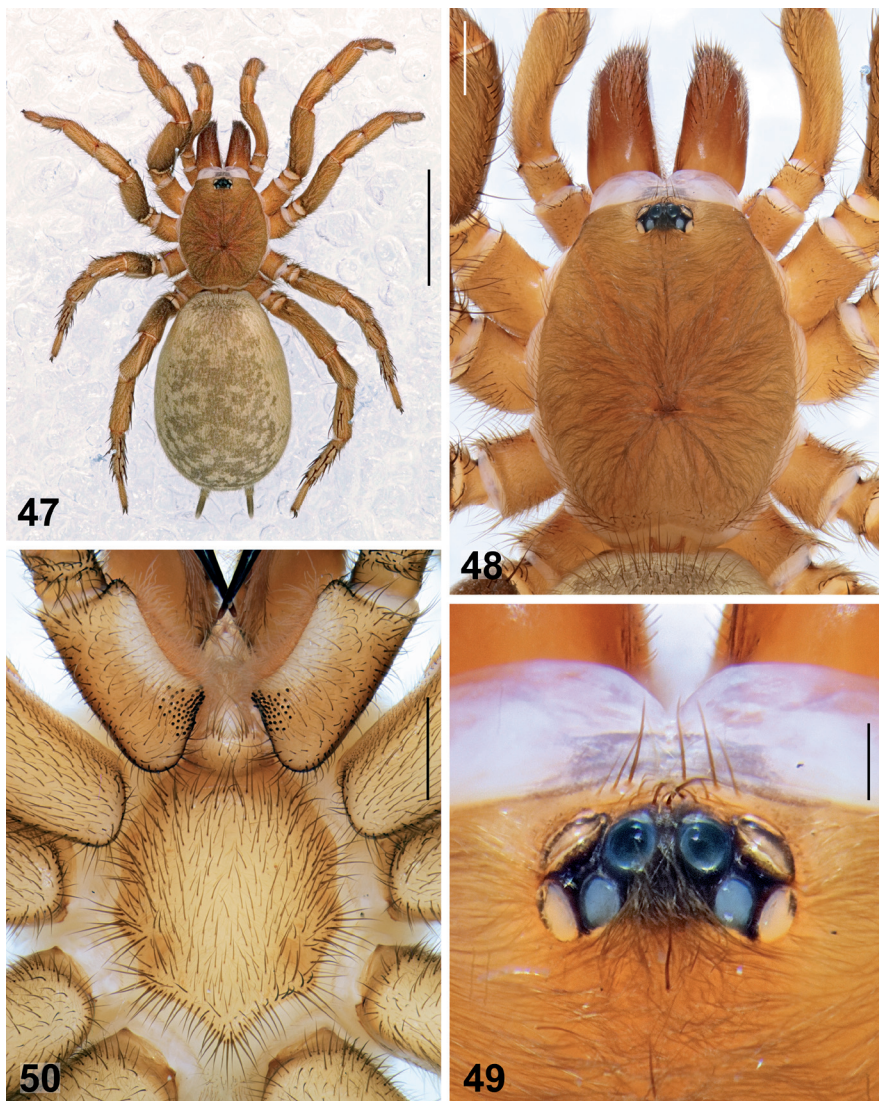
Figs 41, 42: *Afropesa schwendingeri* n. sp., holotype male MHNG-ZA-01/02, tibia and metatarsus I, retrolateral (41) and ventral (42) aspects. Scale bars = 1 mm.

Palp and leg structures. Tibia and metatarsus I retrolaterally and ventrally as in Figs 41, 42. Spines (cymbium and tarsi I–IV aspinose, tibial megaspine underdeveloped): Palp: femur d1–1–1–1–1, pd0–0–1; patella p1; tibia d1–1–0, p0–1–1, pv1(0). Leg I: femur d1(0)–1–1–1(0)–1–1, pd1–1–1, rd0–1–1; patella p1, v1(0);



Figs 43–46: *Afropesa schwendingeri* n. sp., holotype male MHNG-ZA-01/02: (43) distal segments of palp, retrolateral aspect; (44, 45) palpal organ: retrolateral and ventral; (46) spinnerets, lateral. Scale bars: Fig. 43 = 0.5 mm, Figs 44, 45 = 0.25 mm, Fig. 46 = 1 mm.

tibia p1-1, pv1-1-2(1)-2, rv1-1-2(0)-1; metatarsus p1, v1(0)-0-1. Leg II: femur d1(0)-1-1-1-1-1, pd1-1-1, rd1-1-1; patella p1; tibia p1-1, v2-3(2)-3; metatarsus p0-1-0, v2-2-2. Leg III: femur d1-1-1-1-0, pd1-1-1, rd1-1-1; patella p1-1-2(1), r1-1; tibia d1-1-1(0), p1-1-1, r1-1, v2-2-3; metatarsus d2(0)-2-2, p1-1-1,



Figs 47–50: *Afropesa schwendingeri* n. sp., paratype female MHNG-ZA-01/02: (47) habitus, dorsal; (48, 50) cephalothorax, dorsal and ventral; (49) eye tubercle, dorsal. Scale bars: Fig. 47 = 5 mm, Figs 48, 50 = 1 mm, Fig. 49 = 0.25 mm.

r1-1-1, v3(2)-2-4. Leg IV: femur d1-1-1-1-0, pd1-1-1, rd1-1-1; patella r1; tibia p1-1-1(0), r1-1-1(0), v2-2-1(0)-3; metatarsus d2-2-2, pd1-1-1, r1-1-1-1, v1(0)-2-2-3. Trichobothria: 2 rows of 9-11 each on tibiae, 13-16 on metatarsi, 11-14 on tarsi, 10 on cymbium. Metatarsal preening combs present on metatarsi II (one), III (two) and IV (two). Scopula thin, moderately dense and as long as 0.6-0.8 width of segment: entire and distal on metatarsi I-II, short and vestigial on distal metatarsus III, absent on metatarsus IV, entire on tarsi I-II, entire but medially mixed with setae on tarsus III, widely divided on tarsus IV. PTC I-IV with 8-9 teeth on each margin. Leg measurements:

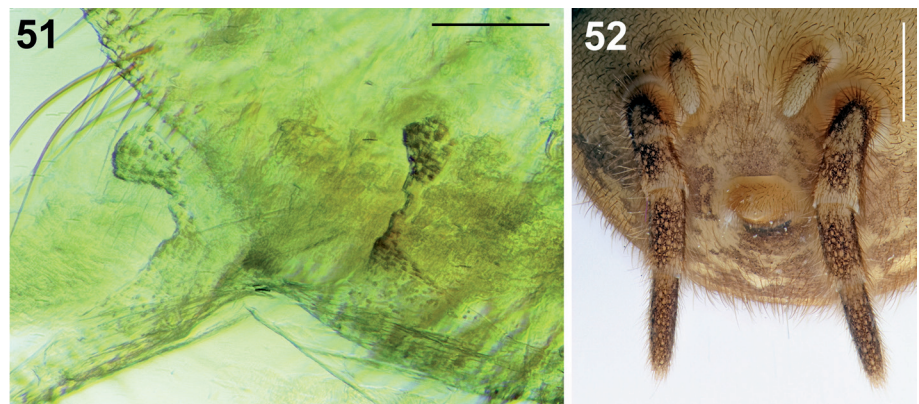
	Palp	I	II	III	IV
Femur	1.97	3.93	3.58	3.41	4.23
Patella	1.02	1.91	1.86	1.82	2.12
Tibia	1.15	2.88	2.49	2.14	3.19
Metatarsus	—	2.96	2.72	3.11	4.48
Tarsus	0.73	2.13	2.14	1.97	2.17
Total	4.87	13.81	12.79	12.45	16.19

Distal segments of palp and copulatory organ as in Figs 43-45. Tegulum pear-shaped. Embolus proximally with low ventral keel and basally dilated dorsal flange. Distal portion of embolus long, slightly curved and gradually tapering to apex.

Spinnerets (Fig. 46). PMS: length 0.69, diameter 0.24. PLS: maximal diameter 0.51; length of basal, medial and apical segments 0.85, 0.52, 0.84; total length 2.21; apical segment digitiform.

Female (paratype). Total length 15.90. Habitus as in Fig. 47.

Colour in alcohol: as in male, but with legs I-IV uniformly coloured; dorsal abdominal pattern with more clearly expressed chevrons than these in holotype male; unlike male, PMS pale yellowish brown with darker brownish bases; most part of PLS with reticulate pattern (large and partially fused dark brown maculae mottled with small pale brownish spots).



Figs 51, 52: *Afropesa schwendingeri* n. sp., paratype female MHNG-ZA-01/02: (51) spermathecae, dorsal (inside); (52) spinnerets, ventrolateral. Scale bars: Fig. 51 = 0.25 mm, Fig. 52 = 1 mm.

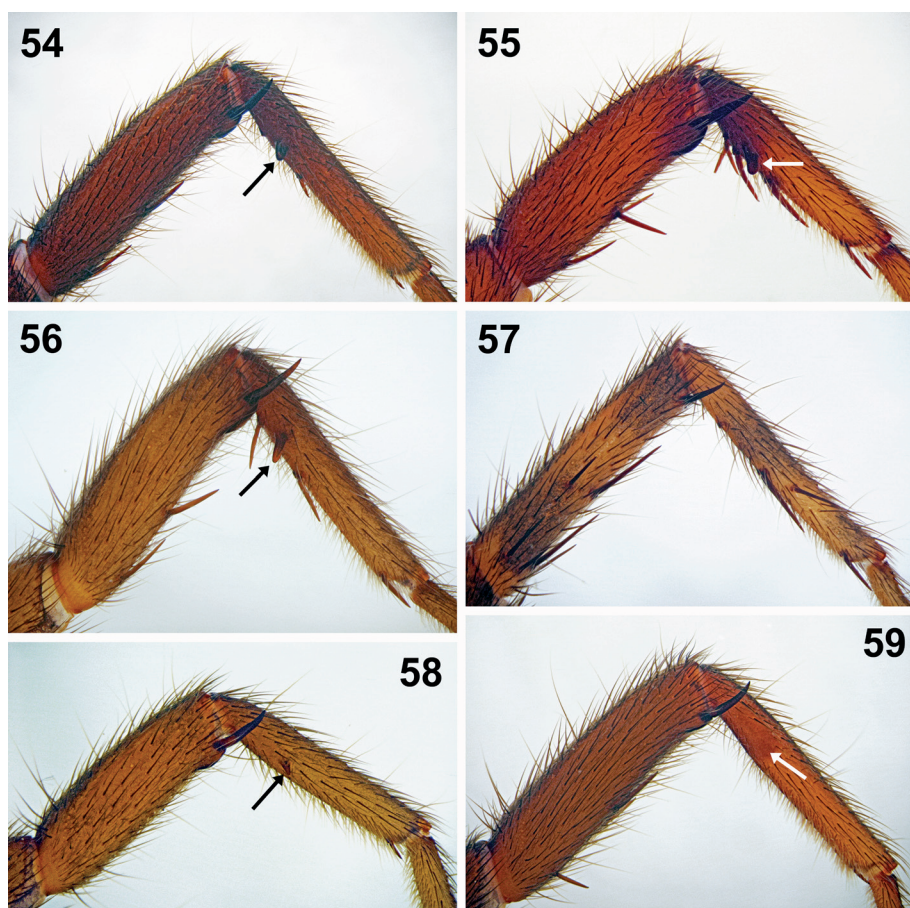
Cephalothorax dorsally and ventrally as in Figs 48 and 50, respectively. Carapace 4.86 long, 3.72 wide. Eye tubercle as in Fig. 49. Eye diameter and interdistances: AME 0.15(0.21), ALE 0.26, PLE 0.21, PME 0.15, AME–AME 0.09(0.03), AME–ALE 0.08(0.05), ALE–PLE 0.03, PLE–PME 0.03, PME–PME 0.32. Chelicerae with numerous thickened setae on dorsodistal edge. Cheliceral furrow with 8 promarginal teeth and 30–35 heterogeneous (tiny to minute) mesobasal denticles. Labium 0.42 long, 0.86 wide. Sternum 2.46 long, 2.11 wide. Maxillae each with ca. 55 unmodified cuspules arranged as in male. Maxillary serrula well visible under light microscope at 100× magnification.

Palp and leg structures. Spines (all femora with 0–2, but generally 1, basodorsal spines and 3–5 dorsal bristles alongside midline; palpal patella, patellae I–II and tarsi I–IV aspinose): Palp: femur pd1; tibia p1–1, v2–2–3; tarsus v2–0–0. Leg I: femur pd1; tibia p1–1, v1–1–2; metatarsus v2–1–0–1. Leg II: femur pd1; tibia p0–1, v1–1–2; metatarsus v2–2–2. Leg III: femur pd1, rd1–1; patella p1–1, r1; tibia d1–1,



Fig. 53: Records of *Afropesa* spp.: solid grey square – *A. schoutedeni* (Benoit, 1965), n. comb.; empty grey circle – *A. schwendingeri* n. sp.; solid rose circle – *A. gauteng* sp. n. South African provinces: EC – Eastern Cape, FS – Free State, G – Gauteng, KN – KwaZulu-Natal, L – Limpopo, M – Mpumalanga, NC – Northern Cape, NW – North West, WC – Western Cape.

p1-1, r0-1, v2-2-3; metatarsus p1-1-1, pd1-1-1, r1-1-1, rd1-1(0)-1, v2-2-3. Leg IV: femur rd0-0-1; patella r1; tibia p1-1, r1-1-1, v2-2-3; metatarsus p1-1-1-1, pd1(0)-1-1-1, r1-1-1, rd1-1-1, v3(2)-1-3(2)-3. Trichobothria: 2 rows of 9-10 each on tibiae, 14-18 on metatarsi, 11-14 on tarsi, 10 on palpal tarsus. Metatarsal preening combs as in male. Scopula thin and moderately sparse as in male but shorter (as long as 0.3-0.4 width of segment): narrowly divided on metatarsus I, palpal tarsus and tarsus I, distal and widely divided on metatarsus II, widely divided on tarsus II, widely divided and mixed with setae on tarsus III, sparse, bilateral and divided by very wide longitudinal band of ventral setae on tarsus IV. PTC I with 7-9 teeth on each margin. Palpal claw with 4-5 promarginal teeth. Leg measurements:



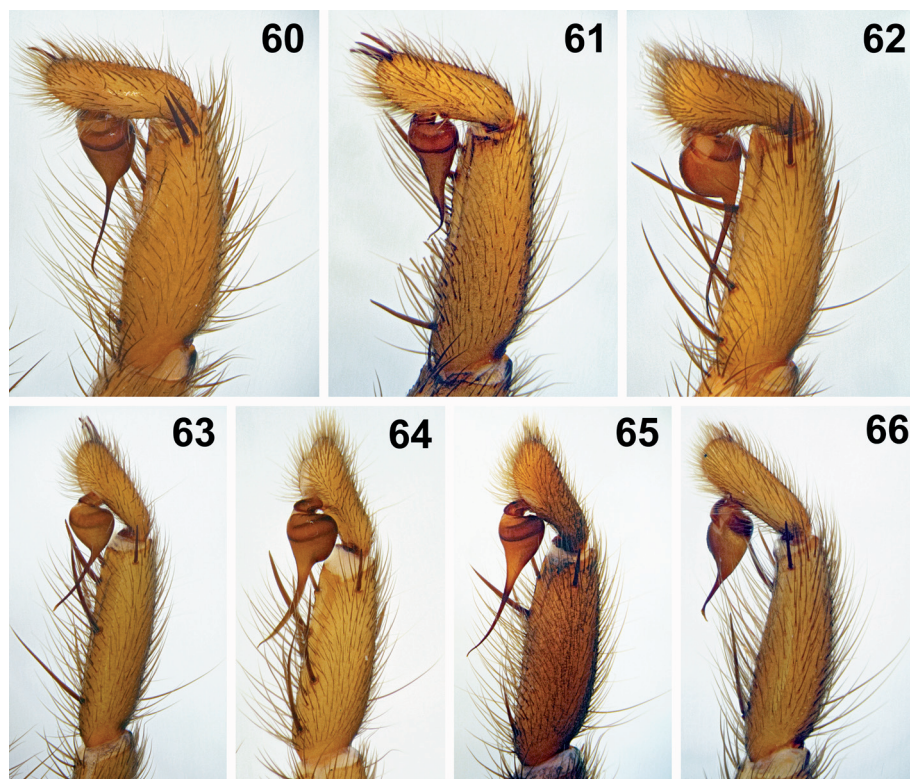
Figs 54-59: Undescribed *Entypesa* spp., tibia and metatarsus I, retrolateral aspect: (54) male CAS-ENT-9052160; (55) male CAS-ENT-9052191; (56) male CAS-ENT-9059481; (57) male RMCA-ARA-174460; (58) male CAS-ENT-9052186; (59) male CAS-ENT-9052174. Metatarsal knob/tumescence indicated with black or white arrow. Not to scale.

	Palp	I	II	III	IV
Femur	2.28	3.34	2.89	2.56	3.42
Patella	1.34	2.05	1.84	1.53	2.16
Tibia	1.40	1.96	1.75	1.48	2.33
Metatarsus	—	1.80	1.83	2.34	3.24
Tarsus	1.62	1.33	1.32	1.42	1.47
Total	6.64	10.48	9.63	9.33	12.62

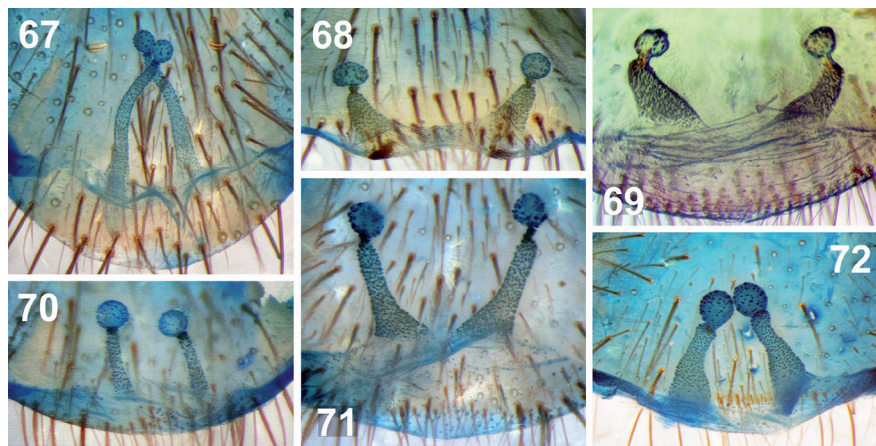
Spermathecae (Fig. 51). Each paired branch consists of wide conical basal part connected through thin, moderately long and weakly twisted stalk to apically dilated (clavate) distal lobe.

Spinnerets (Fig. 52). PMS: length 0.87, diameter 0.28. PLS: maximal diameter 0.51; length of basal, medial and apical segments 1.17, 0.89, 1.14; total length 3.20; apical segment digitiform.

Holotype: ♂ **South Africa:** *Limpopo:* Soutpansberg Mts, 50 km W Louis Trichardt, Lajuma Mt Retreat [23°02'20"S 29°25'50"E], 1300–1400 m, 1–2.iv.2001, P. Schwendinger (MHNG-ZA-01/02).



Figs 60–66: Undescribed *Entypesa* spp., palp, retrolateral aspect: (60) male CAS-ENT-9052173; (61) male CAS-ENT-9052174; (62) male CAS-ENT-9052176; (63) male CAS-ENT-9059369; (64) male CAS-ENT-9059444; (65) male CAS-ENT-9052160; (66) male AMNH (N/A). Not to scale.



Figs 67–72: Undescribed *Entypesa* spp., spermathecae, dorsal aspect (inside): (67) female CAS-ENT-9059175; (68) female CAS-ENT-9059156; (69) female RMCA-ARA-207045; (70) female CAS-ENT-9059172; (71) female CAS-ENT-9059424; (72) female RMCA-ARA-208537. Not to scale.

Paratype: 1♀, collected together with the holotype, with the same label data (MHNG-ZA-01/02).

Distribution: The species is known only from the type locality.

Ecology: According to the label data, the type specimens were collected in the “montane evergreen forest”.

DISCUSSION

According to the diagnostic features, *Afropesa* gen. n. appears to occupy an intermediate taxonomic position between *Entypesa* and the continental genera of Entypesidae (Table 1). Curiously, *Afropesa* gen. n. and *Entypesa* share only those characters that are found in at least one of the other two entypesid genera, that is *Hermacha* or *Lepthercus*. The new genus can be easily and reliably distinguished from any of the related genera based on a unique set of characters. The systematic position of *Afropesa* gen. n. within the family Entypesidae will become possible after completion of a planned taxonomic revisions of two apparently mingled genera, *Hermacha* and *Entypesa*; the latter, even in the currently narrow sense.

ACKNOWLEDGEMENTS

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Table 1. Diagnostic characters and distribution of the Entypesidae genera. Shaded are characters shared by *Afropesa* n. gen. and other genera.

Character	<i>Entypesa</i>	<i>Afropesa</i> n. gen.	<i>Leptithercus</i>		<i>Hermacha</i>
			<i>dregei</i> species group	<i>haddadi</i> species group	
Rastellum	absent or weakly developed	absent	absent	absent	weakly developed
Male intercheliceral tumescence	small or absent	well-marked	well-marked	well-marked	small and pallid
Maxillary serrula	present/absent always equally in ♂♂/♀♀	present in ♂♂/♀♀	present in ♂♂, present/absent in ♂♂	present in ♀♀, present/absent in ♂♂	absent
Male tibia I: shape	mostly thin and elongated	normal or thick	thin and elongated	very thick	thin and elongated
Male tibia I: apophysis	absent or low mound carrying megaspine	absent or low mound carrying megaspine	raised apophysis with megaspine	raised apophysis with megaspine	absent
Male tibia I: megaspine	mostly present, sometimes underdeveloped	mostly present, sometimes underdeveloped	present as megaspur+spine	present as megaspur+spine	present
Male metatarsus I: shape	normal to long	normal to long	mostly normal	short and curved	normal to long
Male metatarsus I: modifications	generally with cuticular projection	absent or small knob	absent or low mound	blunt spinules	unmodified
Male palpal tibia: shape	normal to long	normal to swollen	generally normal or moderately short	strongly incrassate, posterior part of ventral excavation produced	normal
Male palpal tibia: spines	elongated/strong p-d-r-spines	normal/p-spines	normal/absent	normal/absent	normal
Cymbium	elongated, with or without spines	short aspinose	short aspinose	short aspinose	short, with or without small spines
Embolic keels	small keels or absent	developed flanges	small keels	small keels	small keels or absent
Spermathecae	entire, with widely or narrowly spaced bases, moderate to long conical stalks and small globular heads	wide bases and elongate or globular distal lobes	short and curved or with small base and twisted stalks with globular apical lobes	tubular or with small base and twisted stalks with globular apical lobes	entire, simple
Metatarsal preening combs	present/absent	present	present	present	absent
Distribution	Madagascar + Comoros	mainland South Africa	mainland South Africa	mainland South Africa	mainland South Africa

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