Descriptions of *Sceliraptor* gen. n. and two new species from Kenya (Araneae, Palpimanidae)

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Abstract

A new palpimanid genus, *Sceliraptor* **gen. n.**, and two new species, *S. murphiorum* **gen. n. et sp. n.** (♂; type species) and *S. jaegeri* **gen. n. et sp. n.** (♂), are diagnosed and described from Kenya. In the shape of the anterior part of the carapace, and the structure of the eye group and legs, the new genus seems to be related to the chedimine genera *Scelidocteus* Simon, 1907, *Sceliscelis* Oketch & Li, 2020 and, especially, to *Sarascelis* Simon, 1893; it reliably differs from them in the structure of a gently and gradually descending posterior part of the carapace and by a very deep and narrow slit-like thoracic fovea (compared to a respectively sharply sloping posterior carapace and a wider fovea in the related genera). Additionally, the male palp structure in *Sceliraptor* gen. n. species is distinct from that of all the related genera. The two newly described species can be distinguished by the palp structure, configuration of the embolus and supporting structures of the bulb, and by the shape of abdominal sclerites. Distribution records of *Sarascelis chaperi* Simon, 1887, *Scelidocteus vuattouxi* Jézéquel, 1964, and *Sceliscelis marshi* Oketch & Li, 2020 are updated.

Keywords: Afrotropical • *Chedima* • Chediminae • *Diaphorocellus* • *Sarascelis* • *Scelidocteus* • *Sceliscelis* • taxonomy

Introduction

The spider subfamily Chediminae is known to account for 35 species in 11 genera from the Afrotropical Region (Zonstein & Marusik 2013, 2017a, 2020; Oketch *et al.* 2020; World Spider Catalog 2022). Despite the fact that, in the last decade, the number of studies devoted to Afrotropical palpimanids has visibly increased, the region remains insufficiently and unevenly studied. Compared to the better-investigated western and southern parts of the continent, the palpimanid fauna of East Africa looks less studied, with only six species of the Chediminae being known from Kenya (Oketch *et al.* 2020; Kioko *et al.* 2021).

The present study is based on examination of the chedimine palpimanids from Kenya, deposited in the collections of the Manchester Museum of the University of Manchester (UK) and the Senckenberg Museum (Germany). The study has revealed two hitherto undescribed species constituting a new chedimine genus. The diagnostic characters of this new genus indicate that it seems to be related to the chedimine genera *Chedima* Simon, 1873, *Scelidocteus* Simon, 1907, *Sceliscelis* Oketch & Li, 2020 and, especially, to *Sarascelis* Simon, 1893, but differs from all of them in many features. The diagnoses and descriptions of this genus and species, as well as the corresponding figures, are provided below.

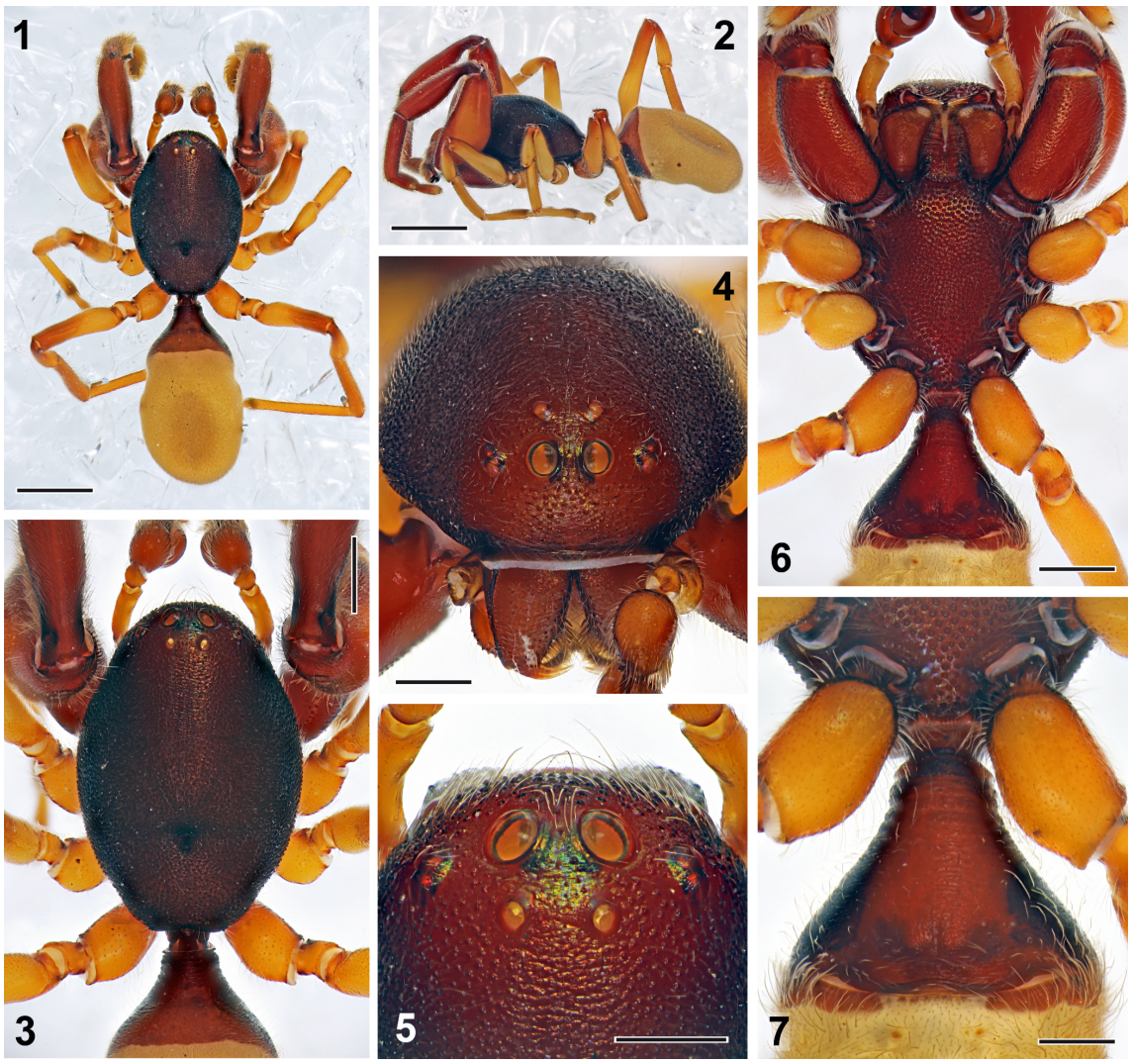
Material and methods

Depositories: MMUE = Manchester Museum of the University of Manchester, UK (curator: D. V. Logunov); NCA = National Collection of Arachnida, ARC-Plant Protection Research Institute, Pretoria, South Africa (curator: P. Marais); NHML = Natural History Museum, London, UK (curator: J. Beccaloni); SMF = Senckenberg Museum, Frankfurt-on-Main, Germany (curator: P. Jäger); SMNH = Steinhardt Museum of Natural History, Tel Aviv, Israel (curator: S. L. Zonstein).

Comparative material: *Chedima purpurea* Simon, 1873: 1♂ (SMF), MOROCCO: Taza, 30 km SE Tissa, 34°14′N 4°27′W, 450 m, 25 February 2004, D. W. Wrase. *Diaphorocellus biplagiatus* Simon, 1893: 1♂ (NCA 2008/4672), SOUTH AFRICA: Western Cap Province, Beaufort-West, Farm Katdoornkuil, 32°42.5′S 22°45.2′E, 03–06 December 2007, D. H. Jacobs. *Sarascelis chaperi* Simon, 1887: 1♂ (SMNH), GAMBIA: West Coast Region, Bijilo Forest Park, 13°26.3′N 16°43.5′W, coastal forest with Rhun palm (*Borassus aethiopum* Mart.), under bark, 22 October 2008, Yu. M. Marusik. First record for this country; the species was previously known from Ivory Coast, Guinea-Bissau (World Spider Catalog 2022) and Ghana (Benoit 1974). *Scelidocteus vuattouxi* Jézéquel, 1964: 1♂ (NHML), NIGERIA: Kwara State, Borgu Game Reserve, flood debris near riverbank, 05–06 May 1973, D. May. The first record for this country; the species was previously known from Ivory Coast (see World Spider Catalog 2022). *Sceliscelis marshi* Oketch & Li, 2020: 1♂ (MMUE, G.7572.3096), KENYA: Kilifi County, nr. Kilifi, 3°38′S 39°51′E, 02 September 1980, J. & F. Murphy. An additional record for this species previously known only from the type locality (see Oketch *et al.* 2020).

Photographs were taken using an Olympus SZX16 stereomicroscope equipped with either Canon-7D or Canon-80D SLR cameras and prepared using the Helicon Focus stacking software (http://www.heliconsoft.com). Scanning electron micrographs were made using the SEM JEOL JSM-5200 scanning microscope at the Zoological Museum, University of Turku, Finland. Distributional map was produced by means of the online mapping software SimpleMappr (Shorthouse 2010).

Measurements were taken through the stereomicroscope to an accuracy of 0.01 mm. All measurements are given in millimetres. The maximal length of the clypeus along the midline was measured from the anterior edge to the perpendicular line connecting the anterior edge of both AME; the



Figs. 1–7: *Sceliraptor murphyorum* gen. n. et sp. n., ♂ holotype. **1** habitus, dorsal view; **2** same, lateral view; **3** cephalothorax, dorsal view; **4** same, frontal view; **5** anterior part of carapace showing eyes, dorsal view; **6** cephalothorax, ventral view; **7** pedicel tube and abdominal scuta, ventral view. Scale bars = 2 mm (1–2), 1 mm (3, 6), 0.5 mm (4–5, 7).

lower lateral clypeus length, measured from the anterior edge of ALE and the closest point of the anterior clypeus edge, follows the maximal clypeus length being enclosed 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, with lengths of every measured segments from the midpoint of the anterior margin to the midpoint of the posterior margin.

Currently, the nomenclature of palpal sclerites in palpimanid males is rather problematic, their homology is fraught with difficulties; hence, the standardized terminology for these structures has not yet been developed and accepted. Here, we use the following terms and their abbreviations compared to the alternative terms previously used by Zonstein & Marusik (2017b): Ep = acute process of embolus base (that seems to be homologous to Sp, a small tegular process in *Chedima purpurea* Simon, 1873), Ti = intermediate branch of tegular apophysis (Up, upper arm of Lp), Tp = prolateral branch of tegular apophysis (So, spine-like outgrowth of Up), Tr = retrolal branch of tegular apophysis (Lp, large tegular process).

Other abbreviations in the text: ALE = anterior lateral eyes, AME = anterior median eyes, CH = carapace height, CL = carapace length, CW = carapace width, CyL = clypeus length, Dp = dorsal process of embolic division, Em = embolus, Fem = femur, L/W = ratio length/width, Met = metatarsus, MOQ = median ocular quadrangle, Pat = patella, PLE = posterior lateral eyes, PME = posterior median eyes, Rb = retrobasal projection of cymbium, Tar = tarsus, Tib = tibia, TL = total length of body in dorsal view, Ts = tegular spur.

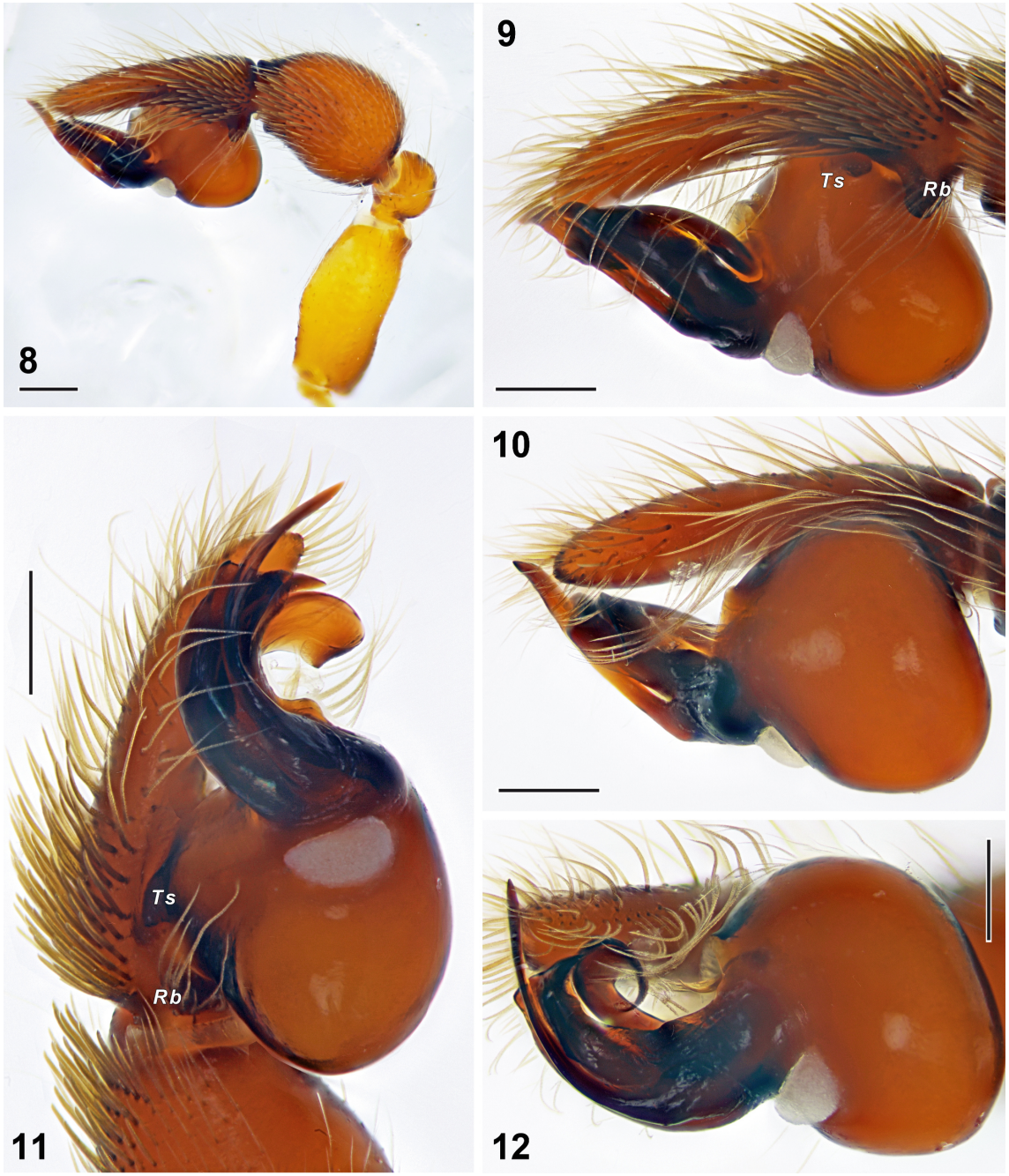
Palpimanidae Thorell, 1870

Subfamily Chediminae Simon, 1893

Sceliraptor gen. n.

Etymology: The genus name is composed of two Latin nouns: *scelus* (crime) and *raptor* (seizer, robber, looter); the gender is masculine.

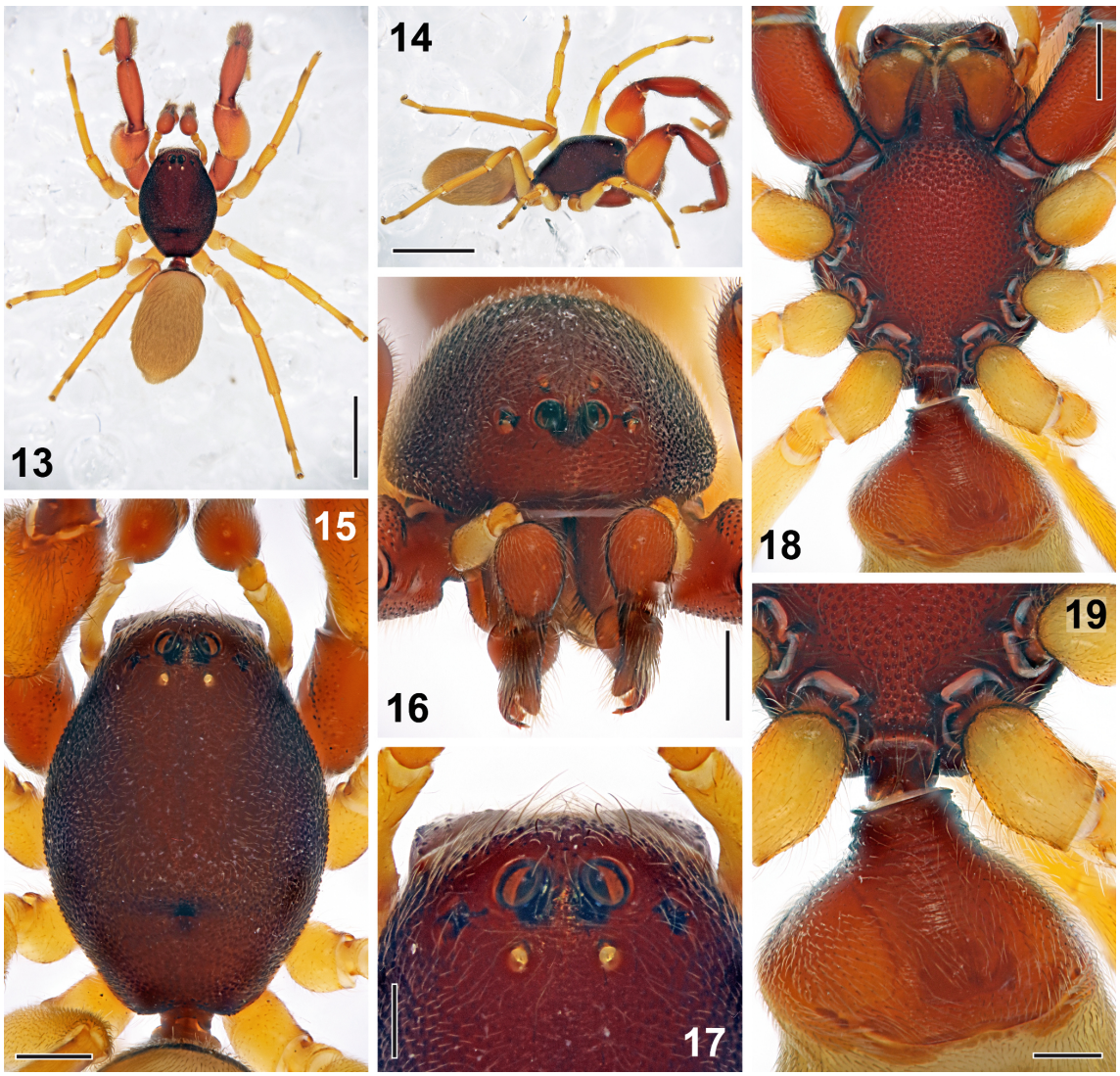
Type species: *Sceliraptor murphyorum* gen. n. et sp. n., by present designation.



Figs. 8–12: *Sceliraptor murphyorum* gen. n. et sp. n., ♂ holotype. **8** palp, retrolateral view; **9** palpal organ, retrolateral view; **10** same, prolateral view; **11** same, retroventral view; **12** same, ventral view. Scale bars = 0.25 mm. Rb = retrobasal projection of cymbium, Ts = tegular spur.

Diagnosis: Habitually, members of *Sceliraptor* gen. n. are most similar to *Sarascelis* species, particularly in conformation of the male palp: i.e. possessing a rather fragile embolus in combination with strengthened supporting structures. However, *Sceliraptor* gen. n. can clearly be distinguished from *Sarascelis* in having only partially fused tegular sclerites (completely fused and integrated similar structures in *Sarascelis*; cf. Figs. 9–12, 21–24, 28–36 and Figs. 25–26; Jézéquel 1964: figs. 7, 9, 11). Outside this pair, males of other Afrotropical chedimine genera possess either a normally developed and stronger sclerotized embolus, or an otherwise arranged eye group combined with a longer although also weakly sclerotized embolic steam (see Fig. 27; Jézéquel 1964: figs. 2, 4; Benoit 1974: figs. 8–9, 12–13; Zonstein, Marusik & Omelko 2016: figs. 5–6, 11–18; Zonstein & Marusik 2017: fig. 2A, C–H; 2020: figs. 2A–D, 4A–F, 5A–D; Oketch *et al.* 2020: figs. 1D–F, 2C–E). The new genus can be also distinguished by a gently and gradually descending thoracic part of the carapace, a very deep and narrow slit-like thoracic fovea, as well as by the absence of true stridulatory ridges on chelicerae combined with the presense of several large teeth on paired tarsal claws.

Description: Medium-sized to large chedimine palpimanids (TL 6–8.5 mm). Cephalothorax coarsely granulated. Carapace long-oval to diamond-shaped, narrowed and rounded anteriorly and posteriorly, with raised central part gently sloping toward posterior edge. Narrow thoracic fovea deeply excavated, foveal sulci poorly discernible. Clypeus



Figs. 13–19: *Sceliraptor jaegeri* gen. n. et sp. n., ♂ holotype. **13** habitus, dorsal view; **14** same, lateral view; **15** cephalothorax, dorsal view; **16** same, frontal view; **17** anterior part of carapace showing eyes, dorsal view; **18** cephalothorax, ventral view; **19** pedicel tube and abdominal scuta, ventral view. Scale bars = 2 mm (13–14), 0.5 mm (15–16, 18), 0.25 mm (17, 19).

moderately long. Eight eyes: AME largest, ALE considerably smaller, PLE and PME small and subequal in size. MOQ square or slightly wider than long. Chilum inconspicuous. Chelicerae ~1.3–1.5× longer than clypeus; stridulatory ridges poorly discernible; cheliceral fang weakly serrate; cheliceral furrow armed with peg teeth. Maxillae triangular. Labium long and narrow, deeply notched in anterior third to half. Polygonal sternum densely granulated and extends backward between coxae IV.

Leg formula: 4123 or 1423. Leg I with considerably swollen and flattened femur; dorsal surface of coxa and ventral surface of femur, patella, tibia and metatarsus armed with moderately dense low cuticular thorns. Tibia and metatarsus I with wide, long and dense prolateral scopula. Leg tarsi II–IV moderately short; paired tarsal claws narrow and provided with several relatively long teeth. Claw tufts well developed.

Abdomen spindle-like, in unsclerotized part with contrast dorsal pattern or uniformly pale coloured. Abdominal scuta conforming relatively short to moderately long pedicel tube; dorsal portion of scutum varies from relatively small to moderate. Small spinneret group set on low mound. AMS small, cylindrical, two segmented; PMS and PLS indiscernible.

Male palp short (about as long as carapace width). Femur, tibia and cymbium subequal in length; patella globular and about three times shorter than any of other listed segments. Tibia swollen. Cymbium narrow, with fairly short retrobasal projection (Rb). Tegulum large pot-shaped, slightly wider than long, with poorly sclerotized small, short and thin embolus and several partially fused and heavily chitinized supporting structures.

Female characters unknown.

Species included: *S. jaegeri* gen. n. et sp. n. and *S. murphyorum* gen. n. et sp. n.

Distribution: East Africa (Kenya).

Figs. 20–24: *Sceliraptor jaegeri* gen. n. et sp. n., ♂ holotype. **20** palp, retrolateral view; **21** palpal organ, retrolateral view; **22** same, prolateral view; **23** same, ventral view; **24** same, retroventral view. Scale bars = 0.25 mm. Rb = retrobasal projection of cymbium.

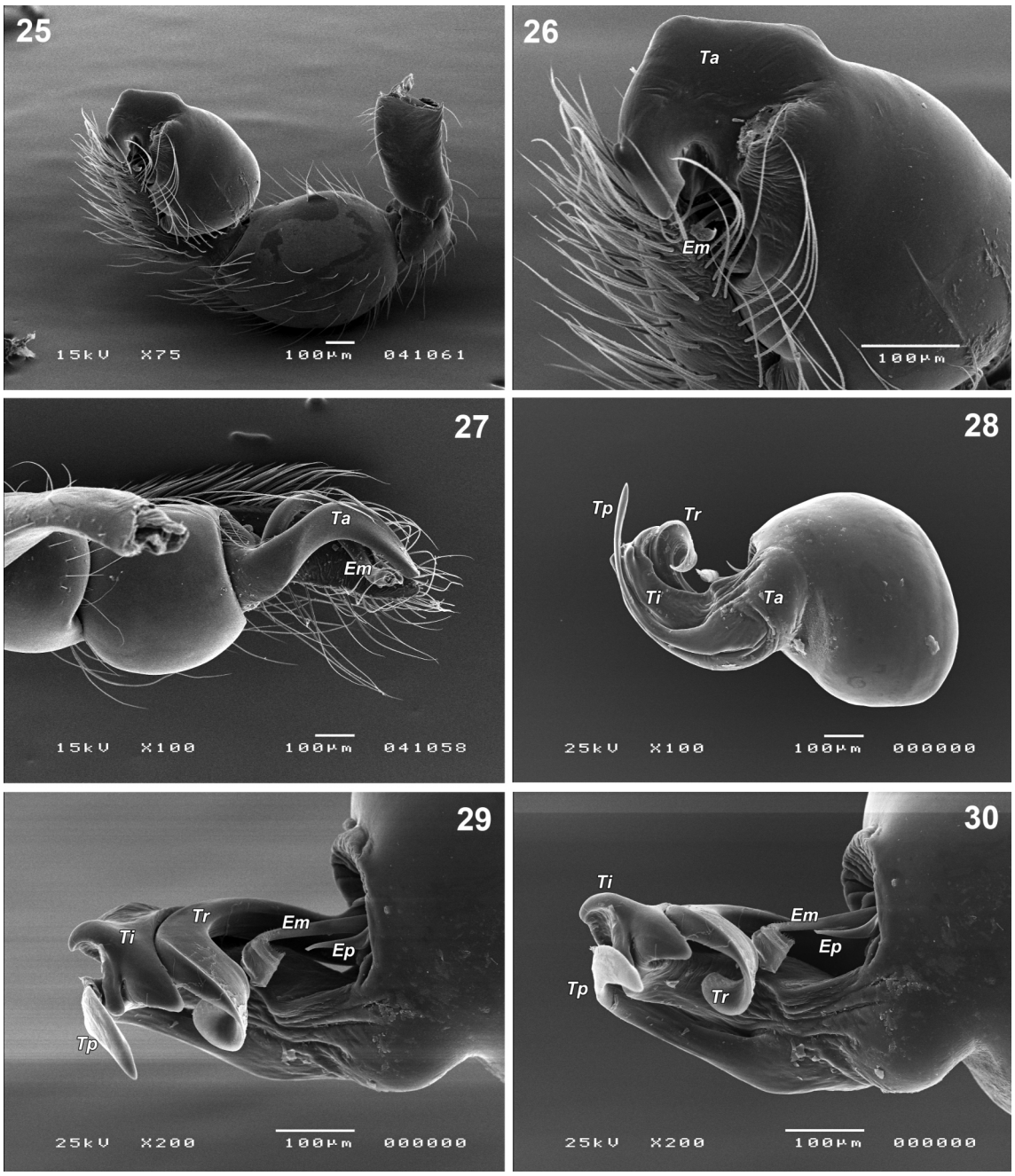
***Sceliraptor murphyorum* gen. n. et sp. n.** (Figs. 1–12, 28–30, 37)

Type: Holotype ♂ (MMUE, G.7572.3127), KENYA: Kilifi County, nr. Kilifi, 3°38′S 39°51′E, 10 August 1980, J. & F. Murphy.

Etymology: The specific epithet is given in honour of the outstanding British arachnologist John Murphy (1922–2021) and his wife Frances Murphy (1926–1995), who together assembled a huge spider collection during their long-term collecting trips around the globe (see Logunov 2022 for further details).

Diagnosis: *Sceliraptor murphyorum* gen. n. et sp. n. differs from *S. jaegeri* gen. n. et sp. n. in having a spine-like prolateral branch of the tegular apophysis (Tp) (*v.* roundly bent), by lacking dorsal process of the embolic division (Dp) (*v.* present), by possessing a retrolateral tegular spur (Ts) (*v.* lacking) and by larger size of the carapace (3.97 *v.* 2.75).

Description of holotype male: Habitus as in Figs. 1–2. Colour in alcohol: carapace, chelicerae, labium, sternum, pedicel tube and abdominal scuta medium to dark cherry red; maxilla, coxa and trochanter I intensely red; palpal tibia, cymbium and bulb dark tangerine orange; femur I dark yellowish orange in proximal half to intensely reddish brown in distal half; patella to metatarsus I medium reddish brown; palpal femur and patella, tarsus I and entire legs II–IV intensely yellowish orange; unsclerotized part of abdomen and spinnerets light yellowish grey. Carapace and abdomen covered with short and moderately sparse greyish pubescence. Measurements: TL 8.49. CL 3.97, CW 2.72, CH 2.38, CyL 0.77 (0.73), Femur I L/W 2.37 (3.27/1.38).



Figs. 25–30: Palpal organ of Afrotropical Chediminae, scanning electron micrographs. **25** *Sarascelis chaperi* Simon, 1887, proventral view; **26** same, enlarged; **27** *Scelidocteus vuattouxi* Jézéquel, 1964, proventral view; **28** *Sceliraptor murphyorum* gen. n. et sp. n., ventral view; **29–30** same, enlarged and showing distal sclerites, prolateral view. Dp = dorsal process of embolic division, Em = embolus, Ep = acute process of embolus base, Ta = tegular apophysis, Ti = intermediate branch of tegular apophysis, Tp = prolateral branch of tegular apophysis, Tr = retrolal branch of tegular apophysis.

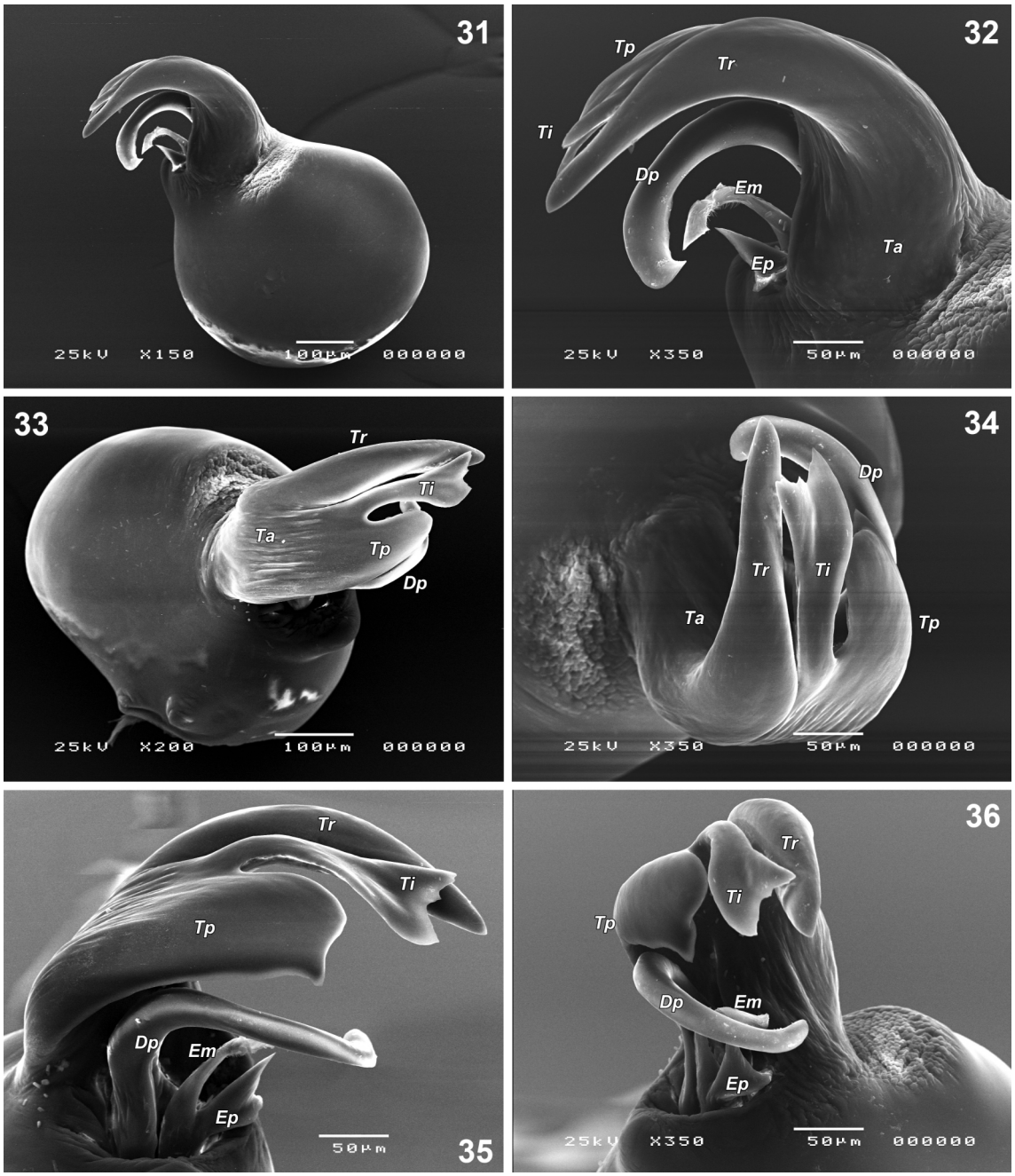
Carapace: with moderately coarse granulations (Fig. 3). Eyes (Figs. 4–5): AME 0.27, ALE 0.09, PME 0.08, PLE 0.08; AME–AME 0.20, AME–ALE 0.22, AME– PME 0.20, PLE–PME 0.38, PME–PME 0.33. Labium deeply notched in anterior half (Fig. 6). Pedicel tube about as long as wide (Fig. 7).

Lengths of leg and palp segments:

	Fem	Pat	Tib	Met	Tar	Total
Palp	0.79	0.24	0.75	—	0.93	**2.71**
Leg I	3.27	3.01	2.23	0.98	1.05	**10.54**
Leg II	2.32	1.35	1.59	1.42	0.88	**7.56**
Leg III	1.93	1.19	1.35	1.39	0.78	**6.64**
Leg IV	3.17	1.55	2.41	2.66	0.79	**10.58**

Palp (Figs. 8–12, 28–30): femur 2.3× longer than wide, 1.2× shorter than cymbium; patella short elipsoid, 1.2× wider than long, 1.3× thinner than femur; tibia swollen, 1.6× longer than wide, 1.5× wider than femur. Cymbium dorsally and laterally densely covered with strong setae. Bulb ovoid, with conical retrolateral tegular spur (Ts) and three-branched tegular outgrowth (which longer than tegulum). Prolateral branch (Tp) spine-like; retrolateral branch (Tr) bent close to tip. Embolus membranous, with spine-like process (Ep) at base. Dorsal process of embolic division lacking.

Female unknown.



Figs. 31–36: Palpal organ of *Sceliraptor jaegeri* gen. n. et sp. n., scanning electron micrographs. **31** ventral view; **32** same, enlarged and showing distal sclerites, ventral view; **33** same, frontal view; **34** same, enlarged, frontal view; **35** same, retrofrontal view; **36** same, profrontal view. Abbreviations as in Figs. 26–30.

Ecology: The holotype was found in litter at the forest floor.

Distribution: Only the type locality. See Fig. 37.

***Sceliraptor jaegeri* gen. n. et sp. n.** (Figs. 13–24, 31–37)

Type: Holotype ♂ (SMF), KENYA: Narok County (a part of the former 'Rift Valley Province', as labelled), Masai Mara Reserve, 1°08.432′S 35°12.313′E, 1735 m, in forest under tree bark, 21 January 1994, W. Braunstein.

Etymology. The specific name is a patronym in honour of the prominent German arachnologist, Dr Peter Jäger, for his highly significant contribution to the spider taxonomy.

Diagnosis: *Sceliraptor jaegeri* gen. n. et sp. n. differs from *S. murphyorum* gen. n. et sp. n. in having the dorsal process (Dp) of the embolic division (*v*. absent), by lacking a retrolateral tegular spur (*v*. present), by possessing a rounded prolateral branch of the tegular apophysis (*v*. a spine-like one) and by smaller size (carapace 2.75 long *v*. 3.97).

Description of holotype male: Habitus as in Figs. 13–14. Colour in alcohol: carapace, chelicerae, pedicel tube and dorsal abdominal scutum dark reddish brown; labium and sternum intense red; maxilla, palpal tibia, cymbium, coxa and trochanter I light red; patella to metatarsus I reddish brown; femur I yellowish orange in proximal half to light reddish brown in distal half; palpal femur and patella, tarsus

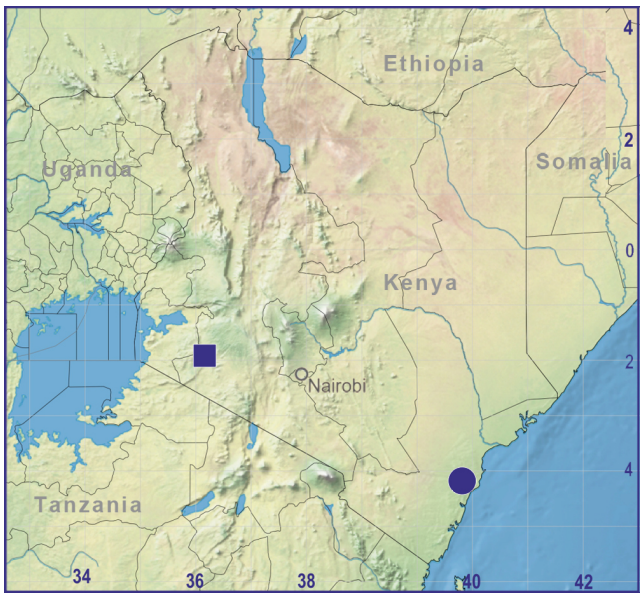


Fig. 37: Localities of *Sceliraptor* species in Kenya. *S. murphyorum* gen. n. et sp. n. (circle) and *S. jaegeri* gen. n. et sp. n. (square).

I and entire legs II–IV pale to medium yellowish orange; bulb and ventral abdominal scuta dark orange; unsclerotized part of abdomen and spinnerets light brownish grey. Carapace and abdomen covered with short and moderately sparse greyish pubescence. Measurements: TL 6.02. CL 2.75, CW 1.97, CH 1.48, CyL 0.54 (0.51), Femur I L/W 2.1 (2.31/1.10). Carapace: with moderately coarse granulations (Fig. 15). Eyes (Figs. 16–17): AME 0.21, ALE 0.09, PME 0.09, PLE 0.08; AME–AME 0.12, AME–ALE 0.14, AME–PME 0.12, PLE–PME 0.29, PME–PME 0.25. Labium deeply notched in anterior third (Fig. 18). Pedicel tube noticeably wider than long (Fig. 19).

Lengths of leg and palp segments:

	Fem	Pat	Tib	Met	Tar	Total
Palp	0.65	0.20	0.63	—	0.60	**2.08**
Leg I	2.31	1.87	1.46	0.66	0.65	**6.95**
Leg II	1.96	0.77	1.24	1.01	0.62	**5.60**
Leg III	1.44	0.76	0.97	0.99	0.61	**4.77**
Leg IV	2.07	1.01	1.59	1.51	0.66	**6.84**

Palp (Figs. 20–24, 31–36): femur 2.25× longer than wide, 1.1× longer than cymbium; patella short ellipsoid, 1.4× wider long, somewhat thinner than femur; tibia swollen, 1.4× longer than wide, 1.5× wider than femur. Cymbium dorsally and retrolaterally densely covered with strong setae. Bulb ovoid, with three-branched tegular outgrowth (which shorter than tegulum). Prolateral branch (Tp) broad and flattened, retrolateral branch (Tr) tusk-shaped, intermediate branch (Ti) apically dilated and furcate. Embolus weakly sclerotized, with spine-like process (Ep) at base. Embolic division provided with dorsal apophysis (Dp). Retrolateral tegular spur absent.

Female unknown.

Ecology: The holotype was found in a forest hiding under tree bark.

Distribution: Only the type locality (Fig. 37).

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References

BENOIT, P. L. G. 1974: Notules arachnologiques africaines. III. Revue *Zoologique Africaine* **88**: 427–436.

JÉZÉQUEL, J.-F. 1964: Araignées de la savane de Singrobo (Côte d'Ivoire). II.—Palpimanidae et Zodariidae. *Bulletin du Muséum National d'Histoire Naturelle de Paris, serie 2* **36**: 326–338.

KIOKO, G. M., MARUSIK, Y. M., LI, S. Q., KIOKO, E. N. & JI, L. Q. 2021: Checklist of the spiders (Araneae) of Kenya. *African Invertebrates* **62**: 49–229.

LOGUNOV, D. V. 2022: John Alan Murphy (1922–2021) and his contribution to arachnology. *Arachnology* **19**: 77–103.

OKETCH, A. D., ZONSTEIN, S., KIOKO, E. N. & LI, S. Q. 2020: Description of a new genus and three new species of the family Palpimanidae (Arachnida, Araneae) from Kenya. *African Invertebrates* **61**: 93–106.

SHORTHOUSE, D. P. 2010: *SimpleMappr, an online tool to produce publication-quality point maps*, onine at: http://www.simplemappr.net

SIMON, E. 1873: Aranéides nouveaux ou peu connus du midi de l'Europe. (2e mémoire). *Mémoires de la Société Royale des Sciences de Liège, serie 2* **5**: 1–174.

SIMON, E. 1887: Études arachnologiques. 19e Mémoire. XXVII. Arachnides recueillis à Assinie (Afrique occidentale) par MM. Chaper et Alluaud. *Annales de la Société Entomologique de France, serie 6* **7**: 261–276.

SIMON, E. 1893: *Histoire naturelle des araignées. Deuxième édition, tome premier*. Paris: Roret: 257–488.

SIMON, E. 1907: Arachnides recueillis par L. Fea sur la côte occidentale d'Afrique. 1re partie. *Annali del Museo Civico di Storia Naturale di Genova* **43**: 218–323.

WORLD SPIDER CATALOG 2022: *World spider catalog, version 23.0*. Bern: Natural History Museum, online at http://wsc.nmbe.ch

ZONSTEIN, S. & MARUSIK, Y. M. 2013: On *Levymanus*, a remarkable new spider genus from Israel, with notes on the Chediminae (Araneae, Palpimanidae). *ZooKeys* **326**: 27–45.

ZONSTEIN, S. & MARUSIK, Y. M. 2017a: Descriptions of the two-eyed African spider genera *Chedimanops* gen. n. and *Hybosidella* gen. n. (Araneae, Palpimanidae, Chediminae). *African Invertebrates* **58** (1): 23–47.

ZONSTEIN, S. & MARUSIK, Y. M. 2017b: A redescription of *Chedima purpurea* Simon, 1873, with notes of the unique copulative stopper mechanism in females (Aranei: Palpimanidae). *Arthropoda Selecta* **26**: 225–232.

ZONSTEIN, S. & MARUSIK, Y. M. 2020: Two new species of *Diaphorocellus* Simon, 1893 from Madagascar (Araneae, Palpimanidae). *African Invertebrates* **61**: 1–15.

ZONSTEIN, S., MARUSIK, Y. M. & OMELKO M. M. 2016: Redescription of the type species of *Diaphorocellus* Simon, 1893 (Araneae, Palpimanidae, Chediminae). *African Invertebrates* **57**: 93–103.