

# *Selenogyrus foordi*, a new species and the first record of the subfamily Selenogyrinae Smith, 1990 from Guinea (Araneae, Theraphosidae)

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## Abstract

A new spider species, *Selenogyrus foordi* **sp. nov.** (♂♀), is described from Mount Nimba, Guinea. Consequently, we provide the first *in vivo* photographs of a selenogyrine in the scientific literature and the first record of Selenogyrinae Smith, 1990 from Guinea. We also record *S. aureus* Pocock, 1897, described from Sierra Leone, from Massif du Zيام Biosphere Reserve, Guinea, representing the second known species for this country.

**Key words:** distribution, morphology, spider, tarantula, taxonomy

## Introduction

Pocock (1897) described the genus *Selenogyrus* Pocock, 1897 to house two new species from Sierra Leone: *S. caeruleus* Pocock, 1897 (the type species) based on the female and *S. aureus* Pocock, 1897 based on the male. In the same work, he also transferred *Hapalopus africanus* Simon, 1887, which was described from the Ivory Coast based on the female by Simon (1887), newly combining this taxon as *Selenogyrus africanus*. For the next nine decades, the genus received no revisionary attention. However, it was overlooked by Pocock (1897) that Simon (1892: 139, 141) had indirectly transferred *H. africanus* to the genus *Cyclosternum* Ausserer, 1871, another genus to which it clearly did not belong (both *Cyclosternum* and *Hapalopus* Ausserer, 1875 are New World genera with urticating setae, and *Hapalopus* also possesses an abdomen pattern), which is where it was technically combined. Hirst (1908) illustrated the prolateral face of the chelicera of *S. aureus* as part of a broader work, but only for comparison purposes.

Smith (1986, 1987) presented drawings of the palpal bulb (in retrolateral view) and the tibial apophysis (in ventral view) of *S. aureus*, also providing a minimalistic redescription. He also gave a short redescription of *S. caeruleus* (as *S. "coeruleus"*, a *lapsus calami* and incorrect subsequent spelling) but without illustrations. *Selenogyrus africanus* and *S. brunneus* Strand, 1907 (an enigmatic species described from 'Western Africa' based on a supposed female,

later relegated as a *nomen dubium* by Nentwig et al. 2020) are simply listed, with neither descriptions nor illustrations.

Smith (1990) later provided more expansive redescrptions of *S. aureus* and *S. caeruleus*, also describing a new species based on a single female from Sierra Leone – *Selenogyrus austinius* Smith, 1990 (note: the World Spider Catalog (2024) considers this epithet a *lapsus calami* and corrected the spelling to *austini*, which we also follow here). He also established a new subfamily, Selenogyrinae Smith, 1990, to house *Selenogyrus*, predominately based on the remarkable intercheliceral stridulatory apparatus. All three species were illustrated and redescrbed in relative detail. Conversely, *S. africanus* was not redescrbed as Smith (1990) was unable to access the type specimen, and *S. brunneus* is provided with a brief textual redescrption but lacking illustrations. Nonetheless, Smith (1990) made the most significant advance in the taxonomy of the genus since its description by Pocock (1897). As mentioned above, the only other taxonomic act was that by Nentwig et al. (2020) who treated *S. brunneus* as a *nomen dubium*, primarily as the type material was destroyed during the Second World War.

Hitherto, the only taxonomic illustrations in the literature after Smith (1990) was by Schmidt (1993, 2003) who reproduced drawings from the earlier literature of *S. aureus* and *S. austini* respectively, making no novel taxonomic contributions to the genus *Selenogyrus* nor textual redescrptions. The World Spider Catalog (2024) currently recognises four species, three from Sierra Leone (*S. aureus*, *S. caeruleus* and *S. austini*) and one from the Ivory Coast (*S. africanus*), all known from a single sex. The species known from females are in urgent need of review and more material from Sierra Leone is needed to confirm whether they are valid. This work is outside the scope of the present one and is being undertaken by a colleague (R. Gallon pers. comm.).

In this work, we describe a new species of *Selenogyrus* based on type material of both sexes from Mount Nimba, Guinea, which is a notable African biodiversity hotspot where a number of new spiders have been described during the present century (e.g. Rollard and Wesolowska 2002; Zonstein 2018). Simultaneously, we provide the first record of the subfamily Selenogyrinae from Guinea and provide, to our knowledge, the first published photographs of a selenogyriine *in vivo*. *Selenogyrus aureus* is also newly recorded for Guinea.

## Materials and methods

Specimens were examined under binocular microscopes. Photographs of the palpal bulb, tibial apophysis, spermathecae, and habitus were made by DS using a Leica DMC500 digital camera mounted on a Leica MZ16A and stacked using the Leica Application Suite (**LAS**) v. 4.13. Abbreviations, Repositories: **NHMUK** = Natural History Museum, London, United Kingdom; **RMCA** = Royal Museum for Central Africa, Tervuren, Belgium. Structures: A = apical keel (of embolus); ALE = anterior lateral eyes, AME = anterior median eyes, PLE = posterior lateral eyes, PME = posterior median eyes; PB = prolateral branch (of tibial apophysis), PS = prolateral superior keel (of embolus); RB = retrolateral branch (of tibial apophysis), RS = retrolateral superior keel (of embolus). Other: coll. = collector; colln. = collection; det. = determined by. Leg spine terminology follows Petrunkevitch (1925) with modifications: = dorsal, v = ventral, r = retro-

lateral, p = prolateral. Leg formulae start with the longest leg to the shortest in order of decreasing size, e.g. 4,1,2,3. All measurements are in mm. Maps were made using SimpleMappr (Shorthouse 2010). Type material of the new species is deposited in RMCA. Micro-computed tomography analyses were performed by AH, the structures were dehydrated in graded ethanol (70–95%) and stained with a 1% Lugol's iodine solution for 24 hours. After washing in pure acetone, the samples were air-dried for 24 hours, and then gently fixed with a piece of tape on a carbon stick. The pieces were scanned with an XREUniTOM (Tescan XRE, Ghent, Belgium) piloted with Aquila software, at 70 keV and 2 W (additional settings: exposure time: 500–700 ms, voxel size: 0.97–1.52  $\mu\text{m}$ , total of 2000 projections). The obtained model was first processed with the Aquila reconstruction software windows version 1.1, followed by segmentation and mesh generation in the 3D analysis Windows-based software Dragonfly 2019 (Object Research Systems (ORS), Canada, <https://www.theobjects.com/dragonfly/index.html>). The model was further processed in GOM Inspect (<https://www.gom.com>). In accordance with the International Code of Zoological Nomenclature, this article was registered in ZooBank prior to publication: <https://zoobank.org/6D1528B6-39B6-46C1-B46E-3E1C2EF65C42>.

### Other type material examined not listed in main paper

Holotype ♀ *Selenogyrus austini* (NHMUK 1899.11.15.5–6), Sierra Leone, 1898, leg. E. E. Austin; holotype ♀ *Selenogyrus caeruleus* (NHMUK 1896.12.20.21–25), Sierra Leone [sic!], leg. Surg. Capt. Clements.

## Taxonomy

### Theraphosidae Thorell, 1869

#### Selenogyrinae Smith, 1990

#### *Selenogyrus* Pocock, 1897

#### *Selenogyrus foordi* sp. nov.

<https://zoobank.org/F659090C-B69A-4DB2-8D0F-810C4413E5C6>

**Material examined. Holotype:** GUINEA • 1 ♂; Keoulanta, Mount Nimba, Guinea, (7°42'23"N, 8°20'48"W; 515 m a.s.l.; 20/11/2017; C. Allard, P. Bumou, A. Henrard, D. Van den Spiegel, A. Samoura, and M. Bamba leg.; NIMBA-2017-088; BE\_RMCA\_ARA.Ara.246088.

**Paratype:** GUINEA • 1 ♀; Seringbara, Mount Nimba, Guinea, 7°40'N, 8°26'W; 599 m a.s.l.; gallery forest; 09/10/2008; D. Van den Spiegel leg.; BE\_RMCA\_ARA.Ara.222490.

**Diagnosis.** Males of *Selenogyrus foordi* sp. nov. can be distinguished from *S. aureus* by the thinner apical taper of the embolus (embolus wider at apex in *S. aureus*) and the presence of darkened femora and white markings on the distal third tibiae *in vivo* (femora with golden tinge and lacking white markings on the distal third of the tibiae in *S. aureus*). Females of *S. foordi* sp. nov. can be distinguished from *S. africanus*, *S. austini*, and *S. caeruleus* by the medially flared receptacles of the spermathecae (not medially flared in *S. africanus*, *S. austini*, and *S. caeruleus*).

**Etymology.** The specific epithet is an eponym honouring our colleague the late Stefan Foord (1971–2023), in recognition of his significant contributions to African arachnology, and in remembrance of his kind and collaborative spirit.

**Description of holotype male (BE\_RMCA\_Ara.246088).** Total length including chelicerae: 26.7. Carapace: (damaged) length 12.0, width 10.5. Caput: slightly raised. Ocular tubercle: (damaged during capture, not measurable). Eyes (interpreted in life): AME > ALE, ALE > PLE, PLE > PME, anterior eye row procurved, posterior row slightly recurved. Clypeus: narrow; clypeal fringe: long. Fovea: deep, procurved. Chelicera: length 4.3, width 1.8. Abdomen: length 10.4, width 6.4. Maxilla with 100–150 cuspules covering approximately 32% of the proximal edge. Labium: length 1.2, width 1.5, with 200–220 cuspules most separated by 0.5–1.0 × the width of a single cuspule. Labio-sternal mounds: separate, raised. Sternum: length 4.9, width 3.6, with three pairs of sigilla. Tarsi I–II and IV fully scopulate, tarsus III missing (but confirmed undivided in paratypes examined). Metatarsal scopulae: I 85%; II 78%; III 43%; IV 17%. Lengths of legs and palpal segments: see Table 1, legs 4,1,2,3. Spination: femur I d 0–0–1, II d 0–0–1, palp d 0–0–1, patella III p 0–0–1, tibia II d 0–2–1, v 2–1–3, III d 2–2–2, v 3–1–3, IV d 1–1–2, v 2–1–3, palp p 0–1–2, metatarsus I v 0–0–1 (apical), II v 2–0–3 (apical), III d 2–2–3, v 3–2–3 (apical), IV d 4–6–3, v 4–6–6 (3 apical). Tibia I with paired tibial apophysis, RB longer than PB, PB with 2 prolateral megaspines situated medially, almost as long as branch; RB with one prolatero-apical megaspine, much shorter than branch (Figs 4A–F, 5A–F). Femur III: slightly incrassate. Palpal tibia: unmodified. Palpal cymbium: unmodified. Metatarsus I: straight, unmodified. Posterior lateral spinnerets with three segments, basal 1.1, median 0.5, digitiform apical (missing). Posterior median spinnerets with one segment. Palpal bulb with TH weakly developed; embolus filiform, tapering strongly in apical third; PS, RS, and A weakly developed, PS and RS apically fused (Figs 2A–I, 3A–D). Stridulation organ: prolateral face of chelicera furnished with clavate stridulatory lyra. Colour in alcohol: brown (Figs 1A–B).

**Description of paratype female (BE\_RMCA\_Ara.222490).** Total length including chelicerae: 52.3. Carapace: length 20.0, width 18.0. Caput: raised. Ocular tubercle: slightly raised, length 3.3, width 1.5. Eyes: ALE > AME, AME > PLE, PLE > PME, anterior row procurved, posterior row recurved. Clypeus: narrow; clypeal fringe: short. Fovea: deep, procurved. Chelicera: length 12.3, width 8.3. Abdomen: length 24.0, width 15.5. Maxilla with 160–180 cuspules, covering approximately 40% of proximal edge. Labium: length 2.7, width 3.4,

**Table 1.** *Selenogyrus foordi* sp. nov. holotype male (BE\_RMCA\_Ara.246088), podomere lengths, \* = missing segment, ≥ = total length calculated based solely on measurements of known segments in each case and thus will differ from true total length.

	I	II	III	IV	Palp
Femur	12.6	11.4	10.0	13.6	7.2
Patella	6.0	5.7	4.6	5.3	3.5
Tibia	10.4	9.5	7.2	11.0	6.9
Metatarsus	11.1	10.1	11.6	16.5	–
Tarsus	7.4	5.5	*	7.0	2.3
Total	47.5	42.2	≥33.4	53.4	19.9

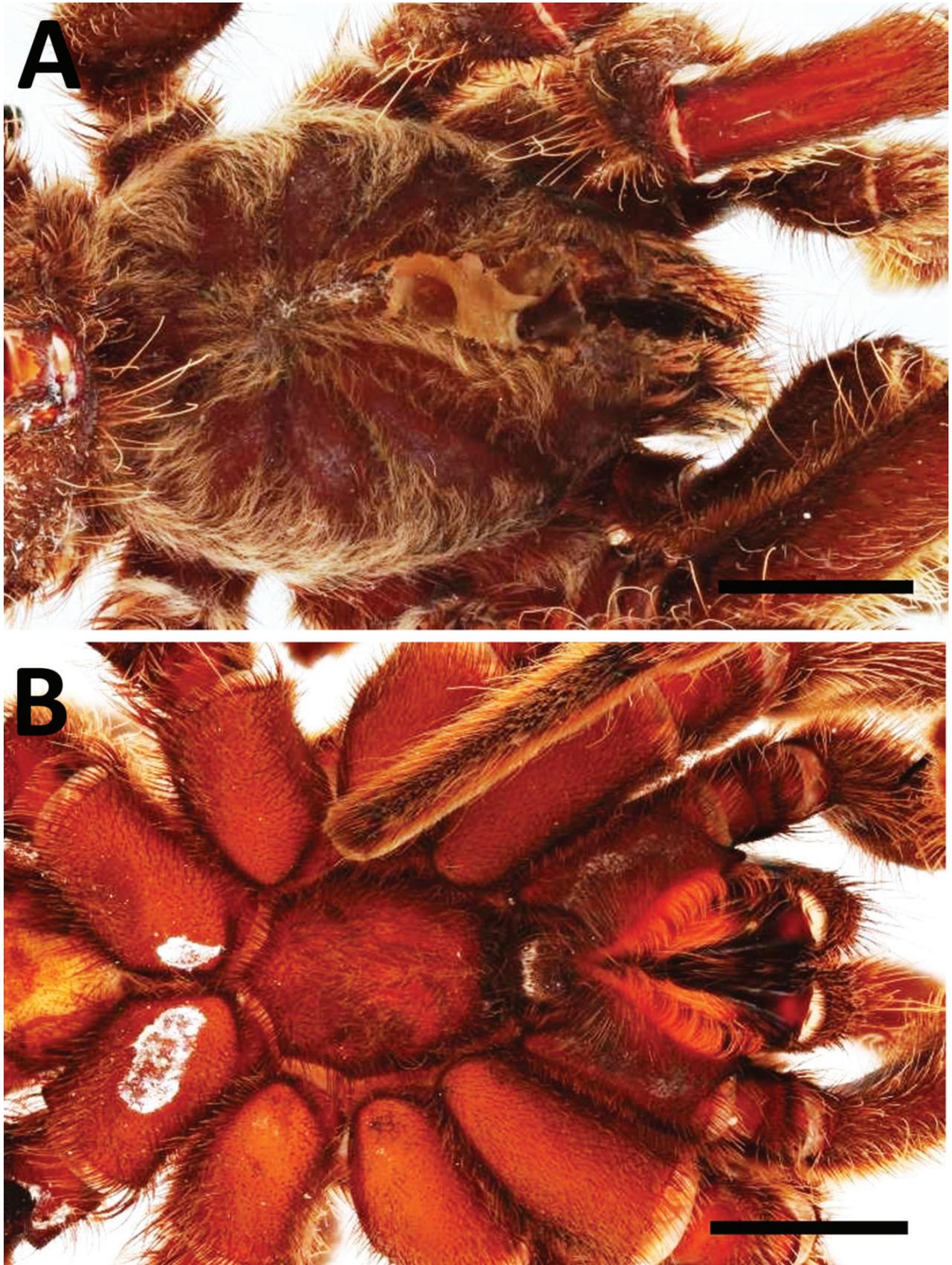
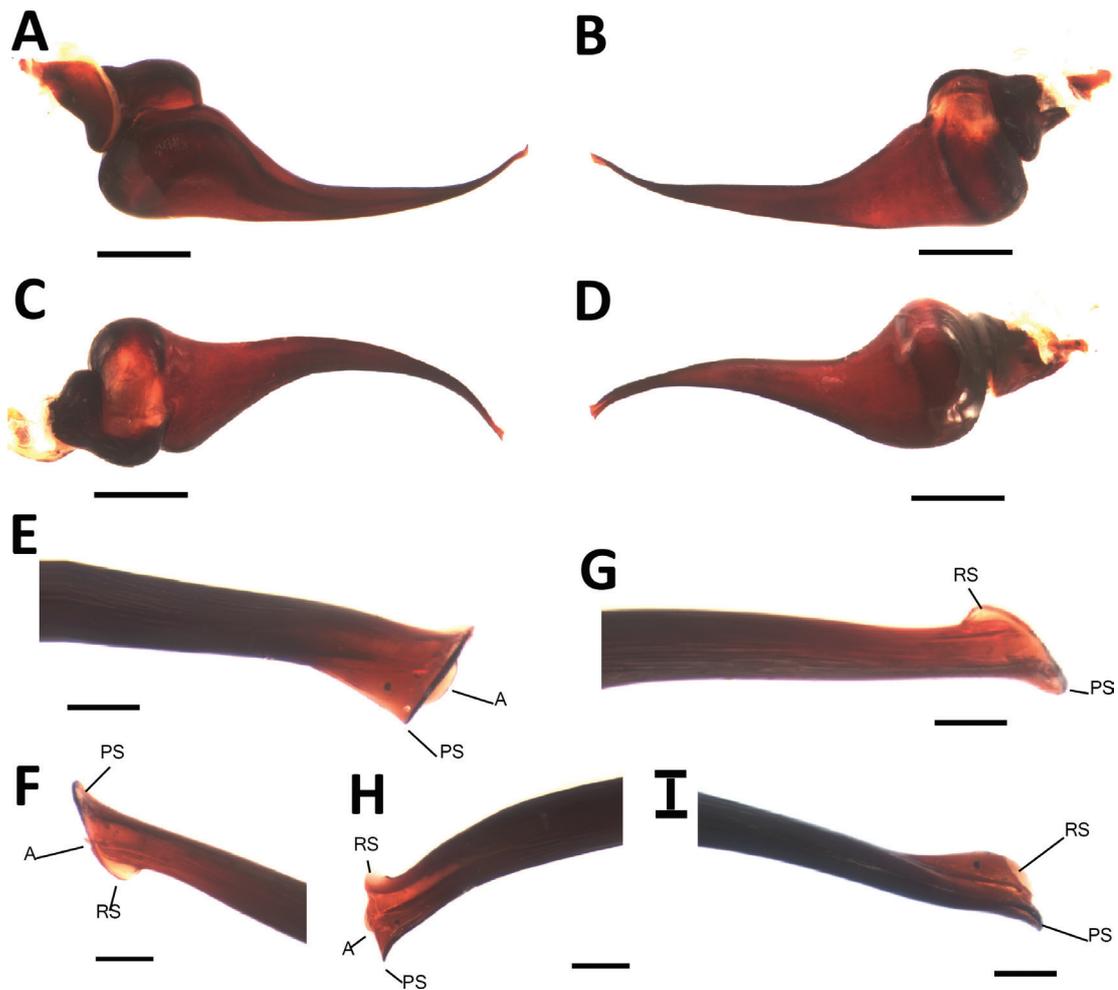
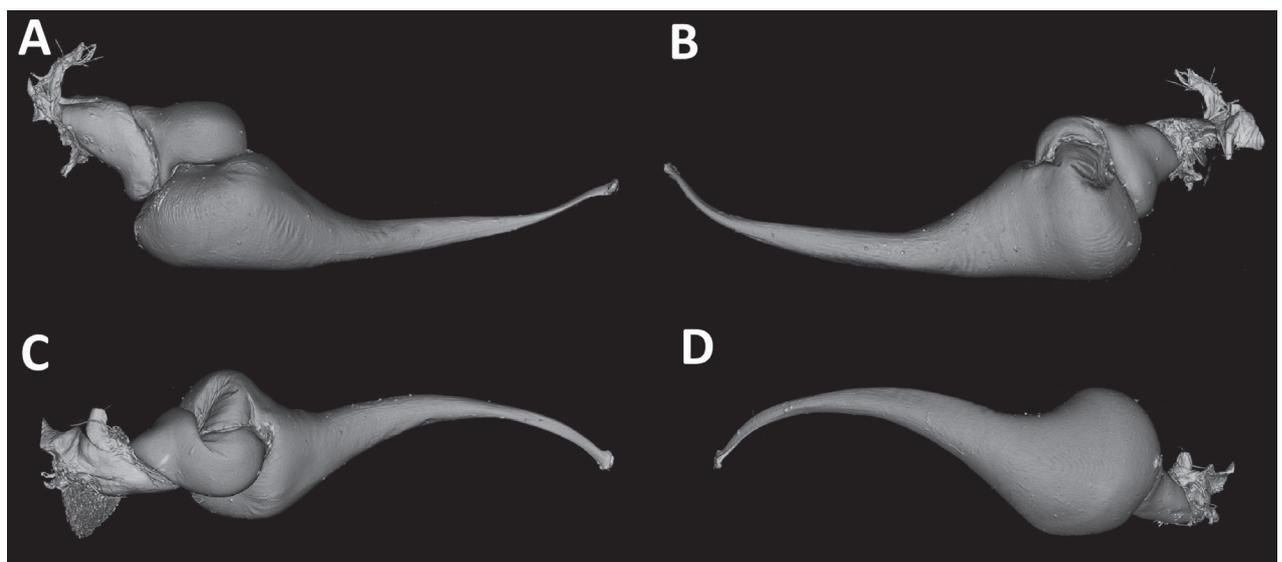


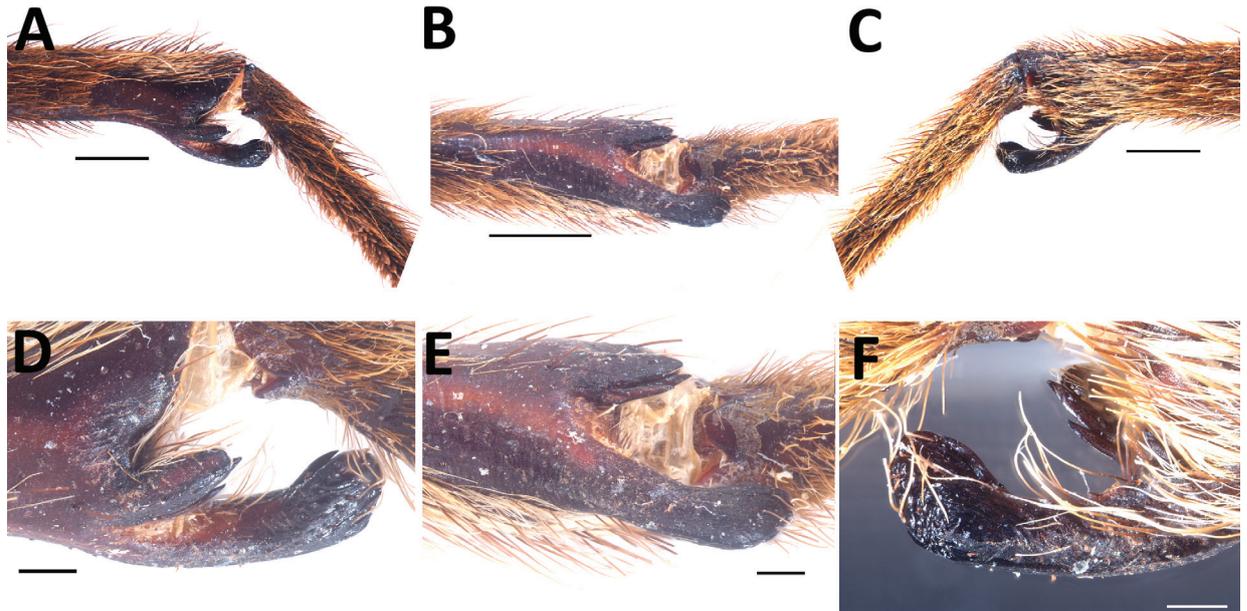
Figure 1. *Selenogyrus foordi* sp. nov. holotype male (BE\_RMCA\_ARA.Ara.246088) **A** close-up of carapace (damaged), dorsal view **B** close-up of maxilla, labium, and sternum, ventral view. Scale bars: 5 mm.



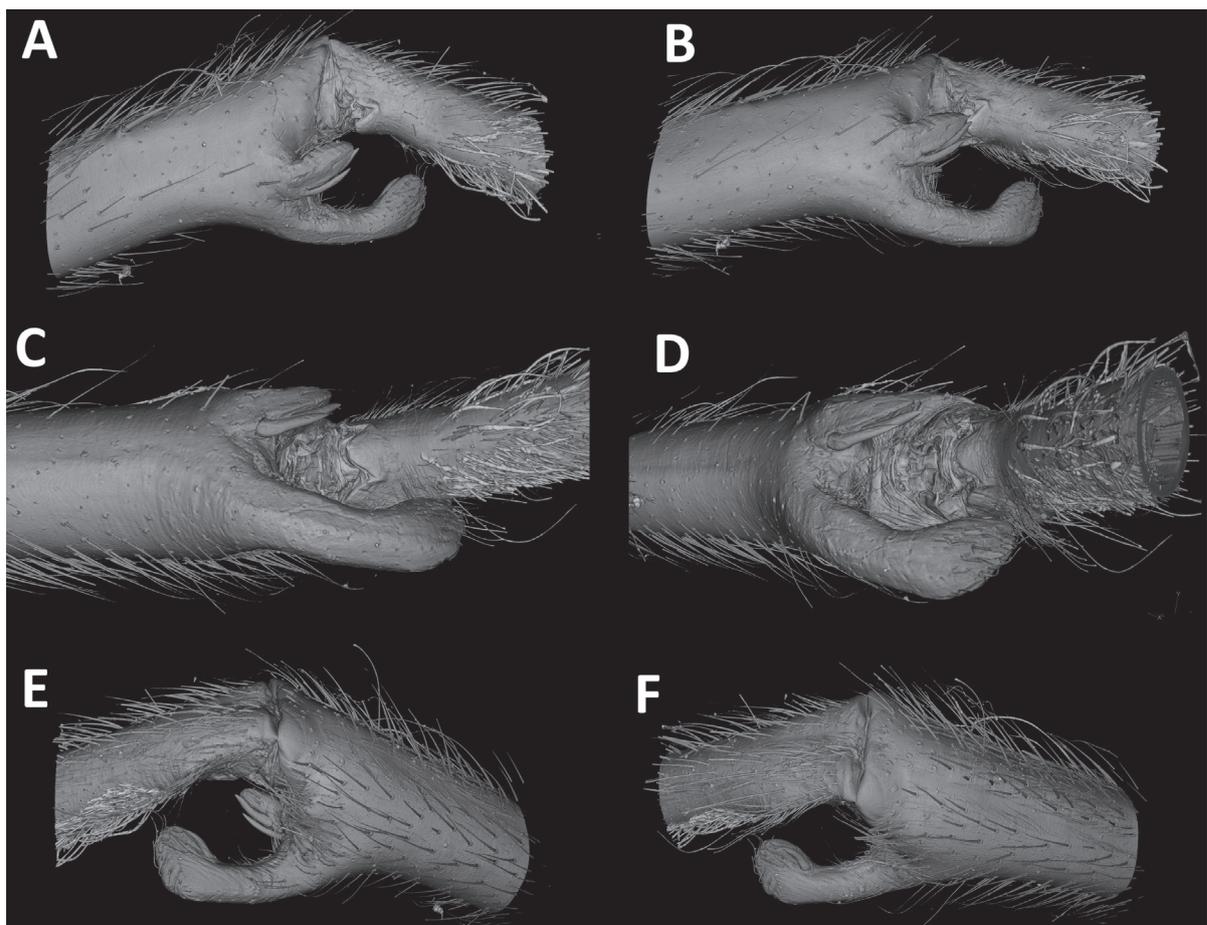
**Figure 2.** *Selenogyrus foordi* sp. nov. holotype male (BE\_RMCA\_ARA.Ara.246088), palpal bulb (left-hand side) **A** prolateral view **B** retrolateral view **C** dorsal view **D** ventral view **E** close-up of embolus, prolatero-dorsal view **F** close-up of embolus, retrolateral view **G** close-up of embolus, dorsal view **H** close-up of embolus, ventral view **I** close-up of embolus, ventro-retrolateral view. Scale bars: 1 mm (**A–D**); 0.1 mm (**E–I**).



**Figure 3.** *Selenogyrus foordi* sp. nov. holotype male (BE\_RMCA\_ARA.Ara.246088), micro-computed tomography of palpal bulb (left-hand side) **A** prolateral view **B** retrolateral view **C** dorsal view **D** ventral view.



**Figure 4.** *Selenogyrus foordi* sp. nov. holotype male (BE\_RMCA\_ARA.Ara.246088), tibial apophysis (left-hand side) **A** prolateral view **B** ventral view **C** retrolateral view **D** close-up, prolateral view **E** close-up, ventral view **F** close-up, retrolateral view. Scale bars: 2 mm (**A–C**); 0.5 mm (**D–F**).



**Figure 5.** *Selenogyrus foordi* sp. nov. holotype male (BE\_RMCA\_ARA.Ara.246088), micro-computed tomography of tibial apophysis (left-hand side) **A** prolateral view **B** prolatero-ventral view **C** ventral view **D** ventro-apical view **E** retrolateral view **F** dorso-retrolateral view.

**Table 2.** *Selenogyrus foordi* sp. nov. paratype female (BE\_RMCA\_ARA.Ara.222490), podomere lengths.

	I	II	III	IV	Palp
Femur	16.4	14.4	12.5	16.8	5.8
Patella	9.4	6.5	7.1	8.1	3.0
Tibia	12.5	10.2	8.2	12.1	3.8
Metatarsus	11.2	10.1	11.1	17.1	–
Tarsus	7.3	7.1	5.7	7.7	4.0
Total	56.8	48.3	44.6	61.8	16.6

with 130–160 labial cuspules most separated by 0.5–1.0 × the width of a single cuspule. Labio-sternal mounds: separate, raised. Sternum: length 8.7, width 7.8, with three pairs of sigilla. Tarsi I–IV fully scopulate. Metatarsal scopulae: I 83%; II 65%; III 49%; IV 23%. Lengths of leg and palpal segments: see Table 2, legs 4,1,2,3. Spination: femur palp d 0–0–1, tibia I v 0–0–3, II v 0–0–3, III v 2–1–2, p 0–1–0, r 0–1–0, IV v 1–1–3, p 0–1–0, r 0–1–1, palp p 0–2–2, r 0–0–2, metatarsus I r 0–0–3, II r 0–0–3, III d 0–0–2, v 2–2–4 (3 apical), p 1–1–2, r 1–1–0, IV v 3–4–5 (3 apical), r 1–1–0. Posterior lateral spinnerets with three segments: basal 2.2, medial 2.0, digitiform apical 3.3. Posterior median spinnerets with one segment. Spermathecae with two distinct and separate receptacles, basally wider than apex, medially with prolateral and retrolateral flaring, tapering gently thereafter to apex, each receptacle with a single indistinct lobe without neck constriction (Fig. 2D). Stridulation organ: prolateral face of chelicera furnished with clavate stridulatory lyra (Fig. 2C). Colour in alcohol: brown (Figs 2A–B).

**Colour *in vivo*.** Male with carapace with turquoise pubescence, with alternating radial bands of fawn and dark green, lateral margins with bands of sepia-coloured bristles, anterior margin fawn. Chelicerae with tawny-brown bristles, endites with long red-brown bristles apically. Palp dark brown, apically with a white blotch. Legs: femora dark brown, with long brown bristles ventrally; patellae dark brown with some lighter bristles; tibiae brown in proximal half and white in distal half; metatarsi light brown with distal part paler; tarsi light brown; all legs with numerous long light bristles, more densely distributed on legs 3 and 4. Abdomen dark brown, with a slightly coppery sheen and light, long, brown bristles; spinnerets brown (Figs 6A–C). Female overall black, with orange-red hairs densely distributed on legs (Fig. 7E).

**Distribution.** Known only from Mount Nimba, Guinea.

## New distribution record

### *Selenogyrus aureus* Pocock, 1897

*Selenogyrus aureus* Pocock, 1897: 768, pl. 41, fig. 2.

*Selenogyrus aureus*: Hirst, 1908: 402, fig. 1.

*Selenogyrus aureus*: Smith, 1987: 98, fig. 100h.

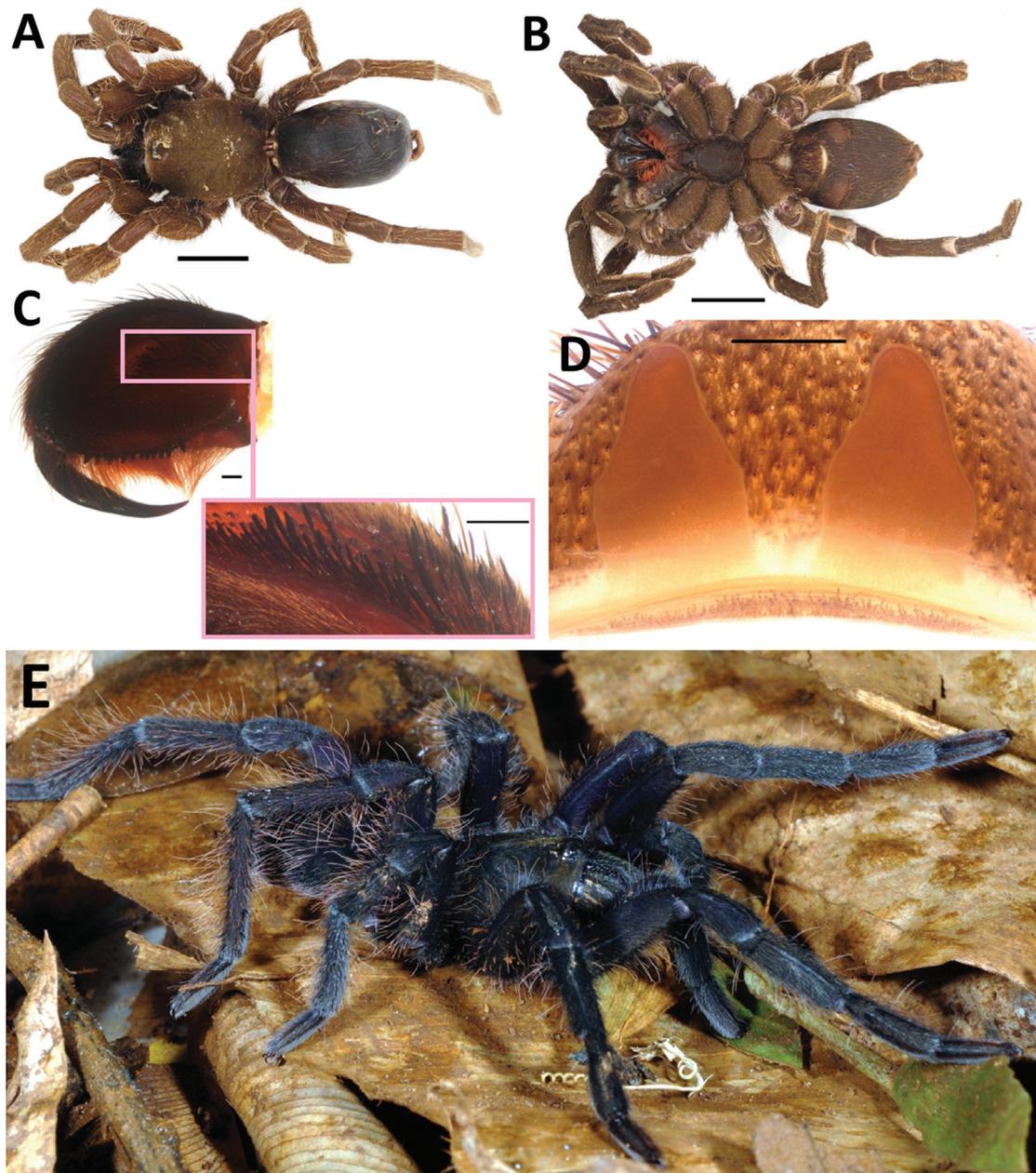
*Selenogyrus aureus*: Smith, 1990: 138, figs 892–911.

*Selenogyrus aureus*: Schmidt, 1993: 58, figs 35.

*Selenogyrus aureus*: Schmidt, 2003: 116, fig. 63.



Figure 6. *Selenogyrus foordi* sp. nov. holotype male (BE\_RMCA\_ARA.Ara.246088), habitus *in situ* at type locality **A** general view **B** same, on different background **C** frontal view, specimen in defensive posture.



**Figure 7.** *Selenogyrus foordi* sp. nov. paratype female (BE\_RMCA\_ARA.Ara.222490) **A** habitus, dorsal view **B** habitus, ventral view **C** chelicera, proximal view (inset: close-up of stridulatory lyra) **D** spermathecae, dorsal view **E** habitus *in vivo*. Scale bars: 10 mm (**A–B**); 0.5 mm (**D**); 0.1 mm (**C**).

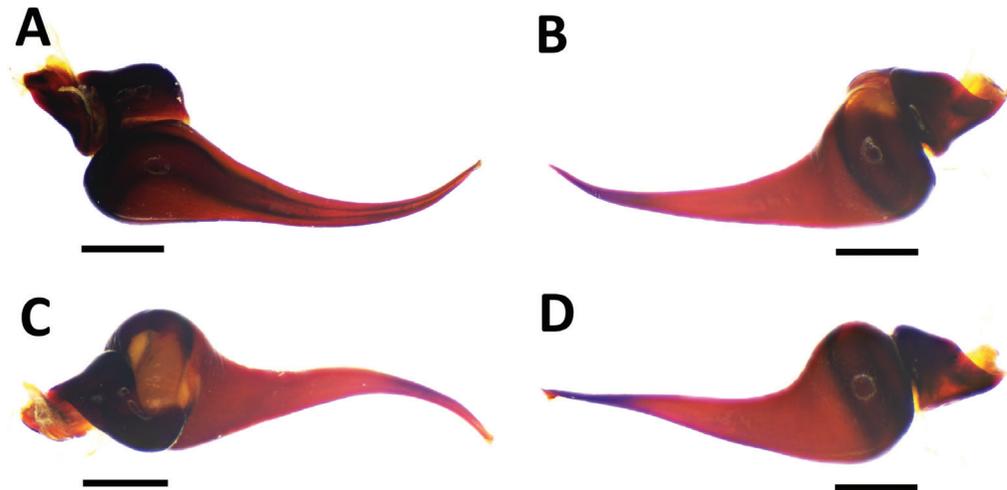
**Material examined. Holotype:** SIERRA LEONE • 1♂; Sierra Leone [*sic!*]; no collector or date given; NHMUK 1865.83.

**Non-type:** GUINEA • 1♂; Massif du Ziamia Biosphere Reserve, Guinea, 8°24'N, 9°17'W; pitfall traps in rainforest; 10/07/1998; leg. D. Flomo; BE\_RMCA\_ARA.Ara.216682 • 1♂; same data except 23/07/1998; BE\_RMCA\_ARA.Ara.216680 • 1♂; same data except 13/04/1998; BE\_RMCA\_ARA.Ara.216681 • 1♂; same data except no date; BE\_RMCA\_ARA.Ara.216683.

**Diagnosis.** See diagnosis for *S. foordi* sp. nov.

**Distribution.** Guinea (new record) and Sierra Leone (World Spider Catalog 2024).

**Remarks.** We provide photomicrographs of the palpal bulb of the holotype male (Figs 8A–D) to assist in identification of this species, but do not give a full



**Figure 8.** *Selenogyrus aureus* Pocock, 1897 holotype male (NHMUK 1865.83), palpal bulb (left-hand side) **A** prolateral view **B** retrolateral view **C** dorsal view **D** ventral view. Scale bars: 1 mm.

description of the specimen since this will be forthcoming in a separate work by another colleague (R. Gallon pers. comm.).

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### Additional information

#### Conflict of interest

The authors have declared that no competing interests exist.

#### Ethical statement

No ethical statement was reported.

#### Funding

No funding was reported.

#### Author contributions

DS identified all specimens, produced photomicrographs and plates, made the diagnosis and descriptions, wrote the first draft of the manuscript and edited the revised manuscript. AH collected specimens, produced photomicrographs and plates, took additional measurements for descriptions, and edited the revised manuscript. DVDS collected specimens, provided locality and ecological data, and edited the revised manuscript.

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## Data availability

All of the data that support the findings of this study are available in the main text.

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