

## New data on some African tarantulas including bulb morphology in *Pterinochilus* Pocock, 1897 (Aranei: Theraphosidae)

### Новые данные о некоторых африканских птицедах, включая морфологию бульбуса *Pterinochilus* Pocock, 1897 (Aranei: Theraphosidae)

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КЛЮЧЕВЫЕ СЛОВА: Araneae, морфология, Mygalomorphae, распространение, Эфиопия, Кения, ЮАР.

**ABSTRACT.** We catalogue the theraphosids of the subfamilies Harpactirinae and Stromatopelminae housed in the Zoological Institute of the Russian Academy of Sciences, Saint Petersburg. The first record of *Pterinochilus raygabrielii* Gallon, 2009 from Ethiopia is presented with discussion on the bulb morphology of this species, alongside faunistic data on *Eucratoscelus constrictus* (Gerstaecker, 1873) and *Pterinochilus murinus* Pocock, 1897 in Kenya, *Idiothele nigrofulva* (Pocock, 1898) in South Africa, and *Stromatopelma calceatum* (Fabricius, 1793) in Guinea.

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**РЕЗЮМЕ.** Составлен каталог птицедах подсемейств Harpactirinae и Stromatopelminae, представленных в коллекции Зоологического института РАН. *Pterinochilus raygabrielii* Gallon, 2009 впервые отмечен из Эфиопии, обсуждается морфология бульбусов этого вида. Приведены фаунистические данные по *Eucratoscelus constrictus* (Gerstaecker, 1873) и *Pterinochilus murinus* (Pocock, 1897) из Кении, *Idiothele nigrofulva* (Pocock, 1898) из Южной Африки и *Stromatopelma calceatum* (Fabricius, 1793) из Гвинеи.

### Introduction

The theraphosid (Theraphosidae Thorell, 1869) fauna of Africa comprises of taxa in five subfamilies: Eumeophorinae Pocock, 1897, Harpactirinae Pocock,

1897, Ischnocolinae Simon, 1892, Selenogyrinae Smith, 1990 and Stromatopelminae Schmidt, 1993 [Smith, 1990; Schmidt, 1993]. Of these, the eumenophorines and harpactirines are the most speciose; all aforementioned subfamilies except Eumenophorinae and Ischnocolinae are endemic to Africa.

In terms of the number of arachnid specimens, the collection of The Zoological Institute of the Russian Academy of Sciences, St Petersburg (ZISP) ranks third in Russia after the collection of the Moscow State University Zoological Museum and the Institute of Systematics and Ecology of Animals in Novosibirsk, housing approximately 80,000 specimens [Mikhailov, 2016]. Indeed, this is likely to be an underestimation of the actual collection size. The current composition of the arachnid collection is represented by specimens from the 1840s onwards, and the collection is actively expanding to this day. The collection of includes various small orders of arachnids (Scorpiones, Solifugae, Opiliones, Amblypygi, Uropygi, Pseudoscorpiones, Palpigradi), but is made up mostly (about 80%) by spiders (Araneae). About half of the collection remains undescribed and, thus, unknown to science. The tropical samples that entered the collection after tropical expeditions in the second half of the 19th and early 20th centuries have not been sorted out completely [Mikhailov, 2016 and TBB pers. obs.]. Recently, the staff of the Arachnology section (D.V. Logunov and T.B. Bariev) with the help and support of D. Sherwood (Arachnology Research Association, London) began cataloguing tarantulas in the ZISP collection.

In this work, we catalogue the small African theraphosid collection of ZISP. Whilst mostly including common species, the discovery of the second known male of

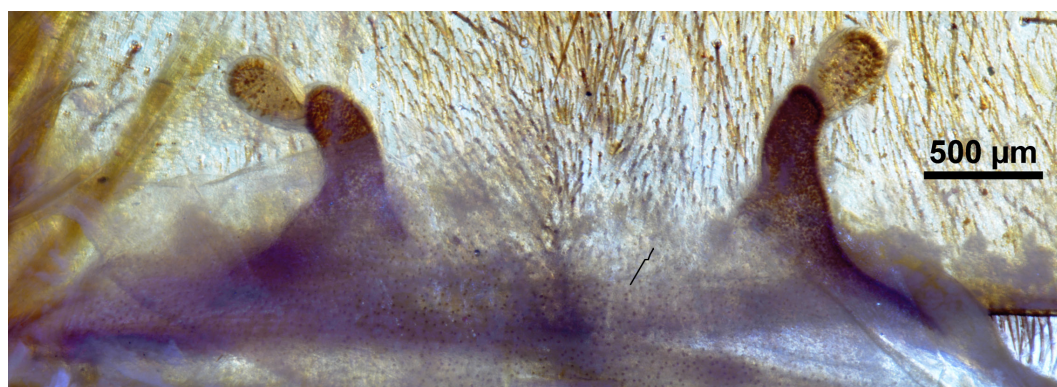


Fig. 1. *Eucratoscelus constrictus* non-type female, spermathecae, dorsal view. Scale bar: 0.5 mm.

Рис. 1. *Eucratoscelus constrictus*, самка, сперматеки, вид сверху. Масштаб: 0,5 мм.

*Pterinochilus raygabrieli* Gallon, 2009 is significant, and allows for clarification and further expansion of its distribution range, and new knowledge of its bulb morphology.

## Material and methods

Photographs were taken using a Canon EOS 5D Mark IV camera, with resulting images stacked using Helicon Focus software. Abbreviation: ZISP — Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia. Embolar keel terminology follows Bertani [2000], abbreviations are given in the relevant figure legends. All museum numbers are given without the prefix ZISP\_ARA\_ARA, which is the same for all samples, for brevity. Old museum specimens often have outdated codes, these are quoted in order to be comprehensive and are presented in [ ] (e.g. 1981 104-912/N25). For completeness, we mention that the only other African theraphosids in ZISP, not covered in detail in this work, are four females of *Hysteroocrates celerierae* Smith, 1990 from Burkina Faso (0000632) (see Bariev & Sherwood [2024]), and a single juvenile specimen of the genus *Batesiella* Pocock, 1903 (0000678) with no information other than it being collected from 'Africa' by Georgy Vasilievich Olsufiev (1875–1967) on an unspecified date. The map was made with Simplemappr [Shorthouse, 2010].

## Results

### *Eucratoscelus constrictus* (Gerstaecker, 1873)

Fig. 1.

*Eucratoscelus constrictus* Gallon, 2002: 227, figs 102–107 (♂♀). Select reference only, for full synonymy list see WSC [2024].

MATERIAL. KENYA: 4♀ (0000644), 7th stop along the Tsavo River, 25 miles from Tsavo station, 17.01.1912 (3.01.1912 on the original label, since the Russian Empire used the Julian calendar), coll. Z.F. Svatosh [1981 104-912/N25].

DISTRIBUTION. Kenya and Tanzania [Gallon, 2002].

REMARKS. We examined material with congruent spermathecal morphology (Fig. 1) from, Kenya, close to other known localities for this species [Gallon, 2002]. The jar also contains one male of *P. murinus* (see below).

### *Idiothele nigrofulva* (Pocock, 1898)

Fig. 2.

*Idiothele nigrofulva*: Gallon, 2004: 95, figs 1–3 (imm. ♂); Gallon, 2010: 41, pl. 19A, 21–22, figs 34–43 (♂♀); *Idiothele nigrofulva*:

Sherwood *et al.*, 2022: 213, figs 8–12 (♂). Select references only, for full synonymy list see WSC [2024].

MATERIAL. SOUTH AFRICA: 1♀ (0000633), Graonoley-Fareu, Distr. Fauresmith, South West Orange Free State (= Fauresmith, Kopanong, Xhariep, Free State, South Africa: 29°45'S 25°19'E), 1894, coll. E. Golub [54-94 /1362/N6].

DISTRIBUTION. Botswana, Mozambique, Namibia, South Africa and Zimbabwe [Gallon, 2002, 2004, 2005].

REMARKS. We examined a female with spermathecal morphology (Fig. 2) in line with intraspecific variation of *I. nigrofulva*, it is also in close proximity to previously known localities [Gallon, 2002].

### *Pterinochilus murinus* Pocock, 1897

Fig. 3.

*Pterinochilus murinus*: Gallon, 2002: 211, figs 26–34 (♂♀); Gallon, 2008: 236, pl. 2, figs 16–18 (♀). Select references only, for full synonymy list see WSC [2024].

MATERIAL. KENYA: 1♂ (0000644), 7th stop along the Tsavo River, 25 miles from Tsavo station, 17.01.1912 (3.01.1912 on the original label, since the Russian Empire used the Julian calendar) coll. Z.F. Svatosh [1981 104-912/N25].

DISTRIBUTION. Angola, Democratic Republic of Congo, Kenya, Mozambique, South Africa, Tanzania, Zambia, and Zimbabwe [Gallon, 2002].

REMARKS. We examined a male from Kenya, close to known localities for the species [Gallon, 2002]. The jar also contains four females of *E. constrictus* (see above). Whilst the bulb was well-known previously, until now the keels (Fig. 3) have not been characterised. Like many species with a filiform embolus, *P. murinus* (the type species of *Pterinochilus*) has only very weakly developed prolateral superior and apical keels at the apex of the embolus. The species is well known and differs from all congeners by its elongated, moderately curved embolus in the male and thickened, spiny setae of the maxilla in both sexes (Fig. 3F) [Gallon, 2002, 2008].

### *Pterinochilus raygabrieli* Gallon, 2009

Figs 4–5.

*Pterinochilus raygabrieli* Gallon, 2009: 361, pl. 1–2, figs 1–8 (♂). MATERIAL. ETHIOPIA: 1♂ (0000688), Lake Chamo, Rift Valley, coast and reeds, 27.12.1990, leg. S.[Ya.] Tsalolikhin.

DISTRIBUTION. Ethiopia (new record) and Kenya [Gallon, 2009].

REMARKS. We provide the first photographs of the bulb of this species, demonstrating that the shape of the embolus varies dramatically based on the orientation of the bulb (Figs.



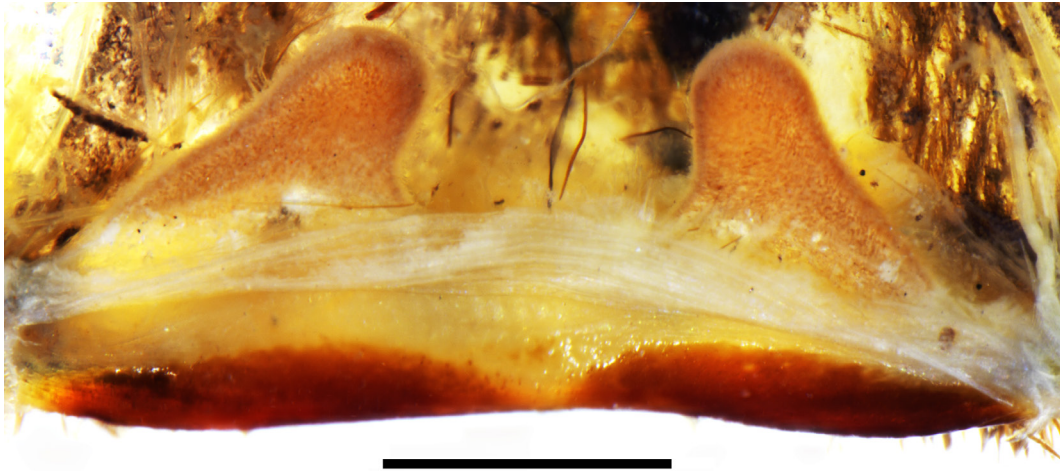


Fig. 2. *Idiothele nigrofulva* non-type female, spermathecae, dorsal view. Scale bar: 1 mm.

Рис. 2. *Idiothele nigrofulva*, самка, сперматеки, вид сверху. Масштаб: 1 мм.

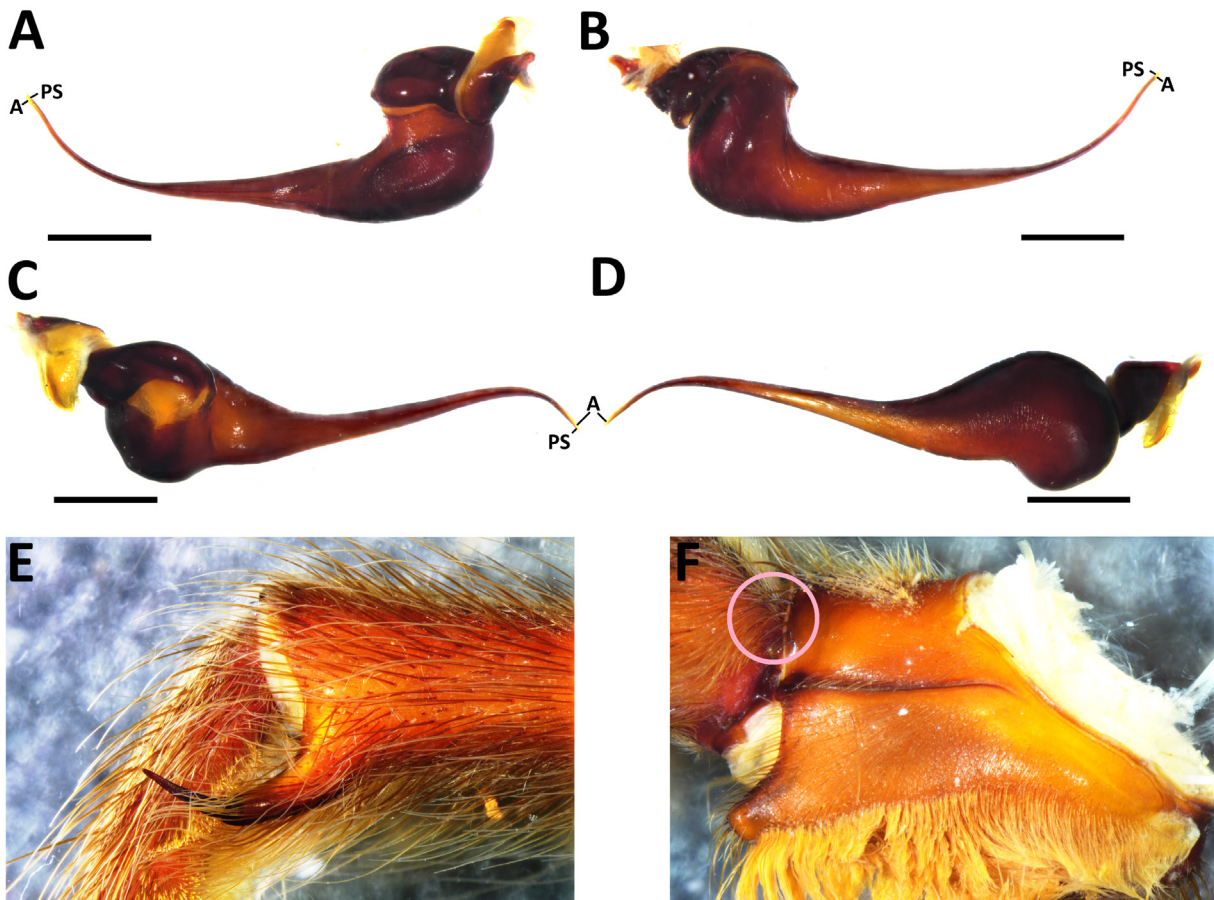


Fig. 3. *Pterinochilus murinus* non-type male, A–D — bulb (right-hand side), E — tibial apophysis, F — maxilla (pink circle shows spine-like setae); A — prolateral view, B — retrolateral view, C — dorsal view, D — ventral view, E — prolateral view, F — prolateral view. Abbreviations: A — apical keel, PS — prolateral superior keel. Scale bars: 1 mm.

Рис. 3. *Pterinochilus murinus*, самец, A–D — левый бульбус, E — тибиаальный отросток, F — максилла (розовый кружок показывает шиповидные щетинки); A — вид спереди-сбоку, B — вид сзади-сбоку, C — вид сверху, D — вид снизу, E — вид спереди-сбоку F — вид спереди-сбоку. Обозначения: A — апикальный киль, PS — верхний пролатеральный киль. Масштаб: 1 мм.

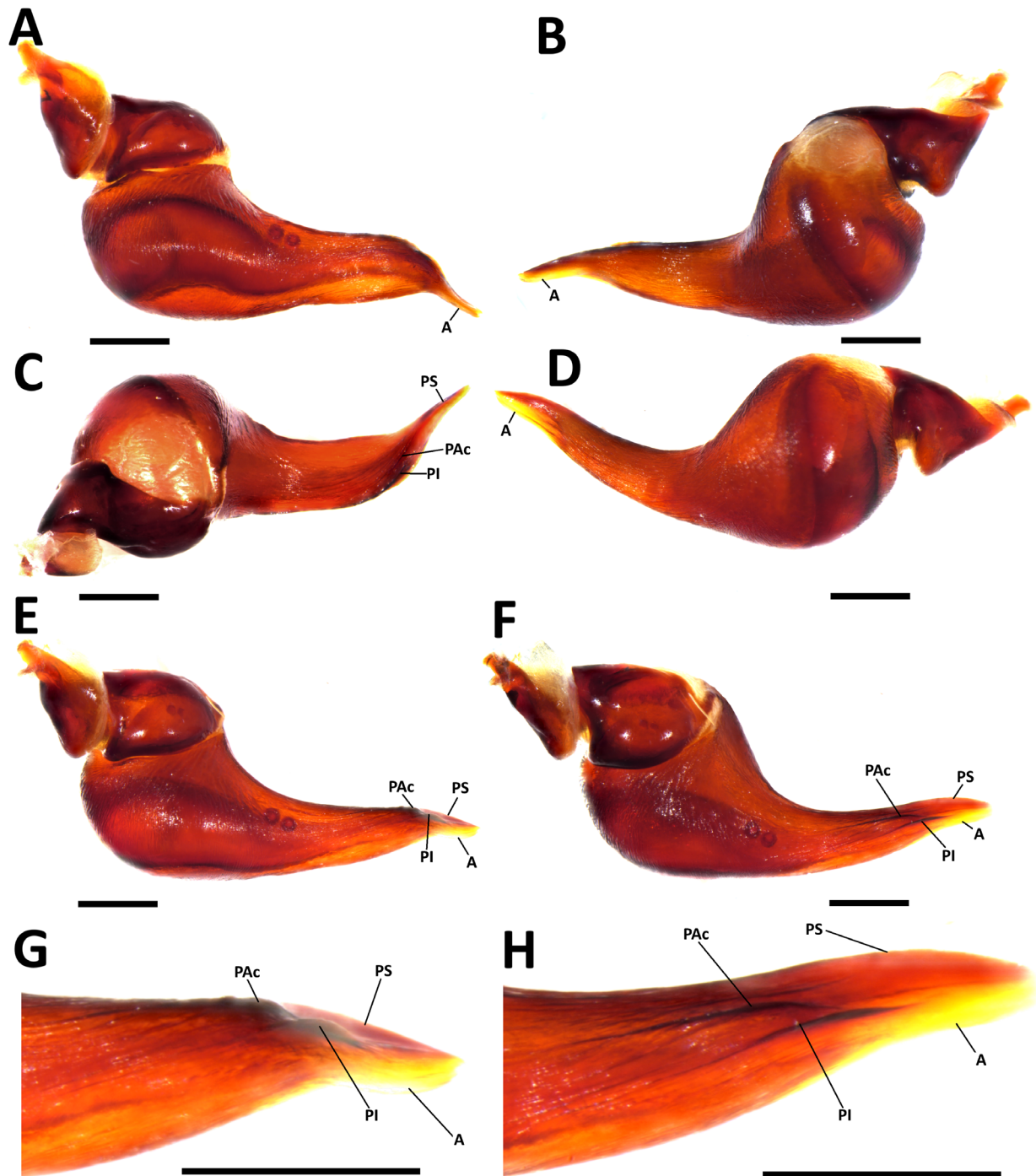


Fig. 4. *Pterinochilus raygabrieli* non-type male representing significant new distribution record, bulb (left-hand side), A — prolateral view, B — retrolateral view, C — dorsal view, D — ventral view, E — prolaterodorsal view, F — dorsoprolateral view, G — close-up of embolus in prolaterodorsal view, H — close-up of embolus in dorsoprolateral view. Abbreviations: A — apical keel, PAc — prolateral accessory keel, PI — prolateral inferior keel, PS — prolateral superior keel. Scale bars: 0.5 mm.

Рис. 4. *Pterinochilus raygabrieli* самец, представляющий существенное расширение известного распространения, левый бульбус, А — вид спереди-сбоку, В — вид сзади-сбоку, С — вид сверху, D — вид снизу, E — вид спереди-сбоку с поворотом наружу, F — вид спереди-сбоку с существенным поворотом наружу, G — эмболос, вид спереди-сбоку с поворотом наружу, H — эмболос, вид спереди-сбоку с существенным поворотом наружу. Обозначения: А — апикальный киль, PAc — пролатеральный дополнительный киль, PI — пролатеральный нижний киль, PS — верхний пролатеральный киль. Масштаб: 0,5 мм.



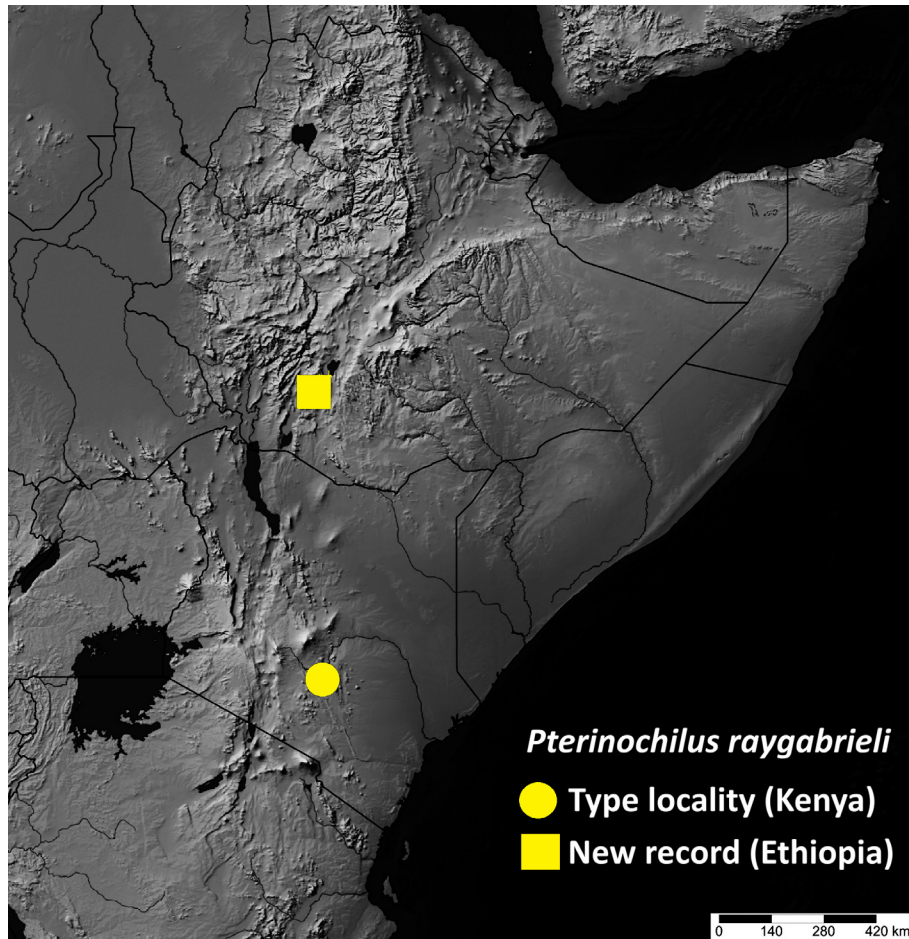


Fig. 5. *Pterinochilus raygabrieli*, distribution range following this work.  
 Рис. 5. *Pterinochilus raygabrieli*, карта распространения.

4A–H). Thus, in the prolateral view *sensu stricto*, the embolus is curved and the keels not fully visible. They are best interpreted by a small rotation into a dorsoprolateral view (Fig. 4F), which matches the purported “prolateral” orientation of Gallon [2009: 362, fig. 5]. The keels are also somewhat visible in the prolaterodorsal view (Fig. 4E). The bulb has four keels on the embolus: a weakly developed prolateral superior keel and apical keel and a developed prolateral accessory keel and prolateral inferior keel.

This record is a significant new range extension for this species, hundreds of miles north of its type locality in the area of Mount Thatha, Kenya (Fig. 5) and is only the second specimen currently known to science. The male of this species, and that of *Pterinochilus alluaudi* Berland, 1914 — also from Kenya — have a stout and thick embolus with numerous developed keels, in contrast to the thin, filiform embolus found in all other known male *Pterinochilus* species. *Pterinochilus alluaudi* and *P. raygabrieli* therefore likely belong to an undescribed genus, along with the holotype female of *P. andrewsmithi* Gallon, 2009.

#### *Stromatopelma calceatum* (Fabricius, 1793)

*Stromatopelma calceata*: Smith, 1990: 59, figs 276–290 (♂♀). Select reference only, for full synonymy list see WSC [2024].

MATERIAL. GUINEA: 1♂ (0000627), Camayen, Africa [= Camayenne, Guinea], in a house, 12.28.1926, coll. Ivanov; 1♂ (0000629), Test Garden near Konakry, French Guinea, Africa (= Conakry, Guinea,

09°30'33"N 13°42'44"W), 5.02.1927, coll. Ivanov; 1♂, 1 imm. (ZISP, ARA\_ARA\_0000673), French Guinea (= Guinea), Africa 1928, coll. Ivanov [91–928].

DISTRIBUTION. Burkina Faso, Cameroon, Ghana, Guinea, Ivory Coast, Liberia, Mali, Niger, Sierra Leone, and Togo [Schmidt, 2003].

REMARKS. The ZISP material examined is from the capital of Guinea, a well-known locality for this unmistakable species which is already well-illustrated in the literature [Smith, 1990].

#### Discussion

The African theraphosids deposited in ZISP are small in number and contain mostly common species from unremarkable localities. Nonetheless, the discovery of a male of *P. raygabrieli* represents not only a new country record but also only the second specimen of this species that is known to science. Consequently, we are able to provide new insights into the bulb morphology of this species, including the course and shape of the embolus in the true prolateral view. Therefore, it is evident that even small museum collections can often yield significant results, even if just from one specimen, when their holdings are examined by taxonomic specialists. We also take this opportunity to correct an error in the figure caption of the

habitus of *H. celerierae* in Bariev & Sherwood [2024: 95, fig. 1], the scale in the caption incorrectly reads “20 mm” when in fact the scale bar is 10 mm long.

#### Compliance with ethical standards

**Conflict of interests:** The authors declare that they have no conflict of interest.

**Ethical approval:** No ethical issues were raised during our research.

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