Myrmarchnini (Araneae: Salticidae: Salticinae: Astioida) of Salonga National Park, D.R. Congo, with description of a new species and two new species records

Myrmarchnini (Araneae: Salticidae: Salticinae: Astioida) национального парка Салонга, с описанием нового вида и двумя новыми находками видов

Brogan L. Pett1,2*, Dieu Merci Mpongo Iyomi3, Menard Mbende3

Б.Л. Пет1,2*, Д.М.М. Йоми3, М. Мбенде3

1 SpiDivERse, Biodiversity Inventory for Conservation npo (BINCO), 3380 Walmersumstraat, Glabbeek, Belgium. E-mail: brogan.pett@outlook.com
2 Centre for Ecology and Conservation, College of Life and Environmental Sciences, University of Exeter, Penryn Campus, Penryn, Cornwall, TR10 9FE, UK.
3 WWF DRC, 14, Avenue Sergent Moke, Q. Socimat, Kinshasa, RD Congo.

* Corresponding author

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КЛЮЧЕВЫЕ СЛОВА: Aranei, мимикрия муравьев, бассейн Конго, пауки-скакунчики, дождевой лес, таксономия.

ABSTRACT. Three species of Myrmarchnini Simon, 1901 (Salticidae) were collected as part of a biodiversity inventory of Salonga National Park, Africa’s largest protected tropical rainforest reserve in D.R. Congo. *Myrmarchane salongensis* sp.n. (♂♀) is described as a new species based on the unique genitalic morphology, distinct cheliceral dentition and colour pattern of the dorsum. Two species — *Myrmarchane foenisex* Simon, 1909 and *Belippo calcarata* (Roewer, 1942) — are reported from the park for the first time.


РЕЗЮМЕ. В рамках проекта по инвентаризации биоразнообразия национального парка Салонга, крупнейшего в Африке охраняемого заповедника тропических лесов в Демократической Республике Конго, были собраны три вида Myrmarchnini Simon, 1901 (Salticidae). Новый вид *Myrmarchane salongensis* sp.n. (♂♀) описывается на основе уникальной морфологии гениталий, отличительного вооружения хелицер и цветового рисунка д سورума. Два вида — *Myrmarchane foenisex* Simon, 1909 и *Belippo calcarata* (Roewer, 1942) — отмечаются впервые в фауне парка.

Introduction

The jumping spiders (Salticidae Blackwall, 1841) are the most diverse spider family in the world, with 6,618 species in 677 genera [WSC, 2023]. In the Afro-tropical Region, over 1,000 salticid species are known. Despite having the relatively large number of described species, an Afrotropical spider fauna remains geographically understudied and still insufficiently studied more generally. Data are limited to a few countries and localities/reserves in these countries. For instance, the D.R. Congo, the largest country in Africa, with an exceptional diversity of imperilled and globally unique biomes [Olson et al., 2001], contains only 66 salticid species [WSC, 2023]. Based on the data from comparable sized tropical countries with high biodiversity that are better studied (e.g., India — 356 species, or Mexico — 332 species; see Metzner [2023]), it is assumed that the D.R. Congo may contain at least 500 salticid species.

Within the D.R. Congo resides Africa’s largest national park, Salonga. Based on an extensive literature search and the database of the Royal Museum for Central Africa, Tervuren [RMCA; Natural Heritage, 2023], the magnitude of knowledge deficit on Congo’s invertebrates is the fact that, with an area of 36,000 km², there are no spider records from Salonga National Park.

The Myrmarchnini Simon, 1901 is the most species tribe of ant-like jumping spiders, partly due to the globally distributed genus *Myrmarchane* MacLeay, 1839 (although primarily known from the Old World) accounting for 190 species [WSC, 2023]. In continental Africa, 41 species have been described to date. Wanless [1978] revised the Afro-tropical Myrmarchnini and described 24 new *Myrmarchane* and two *Belippo* species. Prószyński [2016] split *Myrmarchane s.lat.* into nine other genera (excluding *Myrmarchane*),
The rapid biodiversity assessment in Salonga National Park, which was undertaken in four weeks in November–December 2022, collected spiders as a focal group (see Jocqué et al. [2023] for further details), among which there were two Myrmarachne and one Belippo species. Of them, Myrmarachne foenisex Simon, 1909 and Belippo calcarata (Roewer, 1942) are recorded from the park for the first time. Additionally, a new Myrmarachne was also found in the park. The aim of the present paper is to present two identified and one new species of the Myrmarachnini from the Salonga National Park.

Materials and methods

Spiders were collected in November–December 2022 during an expedition to Salonga co-ordinated by the Biodiversity Inventory for Conservation (BINCO) in partnership with the World Wide Fund for Nature (WWF) D.R.C. (see Jocqué et al. [2023]). All spiders were collected by a dedicated active search for the salticids, although pitfall trapping, leaf litter sieving, and winkler funnels were also used. The material collected was preserved in 70% ethanol. All measurements are in millimetres (mm). Leg measurements are presented as follows: femur, patella, tibia, metatarsus, tarsus. Eye measurements denote diameters of individual eyes. The left pedipalp of the male holotype was dissected and illustrated. The illustrated paratype epigyne was first dissected using a custom-made fine hooked needle to excise the epigynal plate, digested in warm lactic acid solution for 3–5 minutes before being observed in methyl salicylate. The cleared epigyne was temporarily mounted on a slide and examined under a compound microscope. Examinations were carried out with an AmScope ZM-4T stereomicroscope or an Olympus BX61. Images were taken using either a Zeiss Discovery V12 with an Axiocam 208 colour camera or an Olympus BX61 with a DP74 camera. All images were z-stacked with between 10–30 images merged into a single photomontage using Helicon Focus 6.7 (www.heliconsoft.com). Images were enhanced in Adobe Photoshop version 21.0.1 for contrast and white balance. Figure plates were composed also in Adobe Photoshop.

All specimens have been deposited in the Royal Museum for Central Africa (RMCA), Tervuren, Belgium. Export permit for biological samples was issued to BINCO by the eight of which are still valid (Myrmavola was synonymised with Hermosa Peckham et Peckham, 1892 by Marusik & Blick [2019]).
Ministère de l’environnement et développement durable, secretary general à l’environnement et développement durable, le secrétaire général, Kinshasa.

Pedipalp terminology. Wanless [1978] used the term ‘flange’ to describe the median retrolateral tibial apophysis (mRTA) and the term ‘tibial apophysis’ to describe the apical retrolateral tibial apophysis (aRTA); both structures could present in Myrmarachne males. The terms mRTA and aRTA are used here to more accurately follow modern salticid taxonomy terminology, as they correspond to the structures used by Wanless [1978].


**Taxonomy**

Genus *Myrmarachne* MacLeay, 1839

Type species: *Myrmarachne melanocephala* MacLeay, 1839 (Bengal, India).

**Myrmarachne salongensis** Pett, sp.n.

Figs 1–18.


ETYMOLOGY. The specific epithet is derived from ‘Salonga’, the National Park where the species was discovered.

DIAGNOSIS. The females most closely resemble those of *M. mussungue* Wanless, 1978, but can be distinguished by: (i) epigynal atria laterally expanded triangular (vs. mostly vertical to diagonal-triangular); (ii) very large widely spiralled pCD that is about 1.5x the width of aCD region (vs. narrow loop pCD that is of the same width as aCD); (iii) tibia I spination 5-5 (vs. 5-4), (iv) abrupt decline in carapace height posterior to constriction, and (v) dark band covering about 1/3 of abdomen. The males are most similar to those of *M. hesperia* (Simon, 1887) and more widely to the species group to which *M. hesperia* males belong (including *M. evidens* Roewer, 1965 and *M. naro* Wanless, 1978), but can be distinguished by: (i) the clearly posteriorly directed RTA (unique character in the genus); (ii) tibia I spination 5-5 (4-4

Figs 8–11. Female paratype of *Myrmarachne salongensis* sp.n.: 8 — carapace, frontal view; 9 — body, dorsal view; 10 — same, lateral view; 11 — same, ventral view. Scale bars: (9–11) 1 mm.

Рис. 8–11. Самика-паратип *Myrmarachne salongensis* sp.n.: 8 — головгрудь, спереди; 9 — тело, сверху; 10 — то же, сбоку; 11 — то же, снизу. Масштаб: (9–11) 1 мм.
Figs 12–18. Copulatory organs of Myrmarachne salongensis sp.n.: 12, 13 — left male palp, ventral view; 14 — same, retrolateral view; 15 — cleared epigyne, ventral view; 16 — same, dorsal view; 17 — external epigyne, ventral view; 18 — cleared epigyne, dorsal view. Abbreviations as explained in Material and methods. Scale bars: 0.25 mm (12, 15).

Рис. 12–18. Копулятивные органы Myrmarachne salongensis sp.n.: 12, 13 — левая пальпа самца, снизу; 14 — то же, сбоку-сзади; 15 — очищенная эпигина, снизу; 16 — то же, сверху; 17 — внешняя эпигина, снизу; 18 — очищенная эпигина, сверху. Сокращения как объяснено в Материалах и методах. Масштаб: 0,25 мм (12, 15).
in *M. evidens, M. naro* and *M. hesperia*), (iii) mRTA that is more than half width of tibia and arises in the posterior third of tibia (vs. mRTA less than half tibia width in *M. naro* and *M. hesperia*, in *M. naro*, mRTA also arises from anterior third of tibia), and (iv) dark band covering around half of the dorsal scutum.

**DESCRIPTION. HOLOTYPE #.** Measurements: TL 4.14, CL 2.28, CW 0.96, CH 0.90, SL 1.20, SW 0.34, AL 1.86, AW 0.86, chelicera length 2.28, chelicera width 0.38. Legs: I: 1.28, 0.48, 1.22, 0.66, 0.40. II: 0.88, 0.42, 0.72, 0.54, 0.32. III: 1.00, 0.38, 0.80, 0.80, 0.30. IV: 1.48, 0.47, 1.26, 1.16, 0.38. Eyes: AME — 0.44, ALE — 0.20, PME — 0.04, PLE — 0.20, ORW — 1.16. **Colouration:** Carapace generally reddish brown (Figs 1, 2, 4), with a light orange band at thoracic constriction, cephalic region generally orange, white hairs around ocular region most dense between anterior eyes, chelicerae generally reddish brown (Figs 4–6); abdomen contains four faint bands of alternating darker and lighter patches, typically greyish to light yellow, two orange scuta covering much of dorsal face of abdomen; venter mostly pale with orange ventral scuta (Fig. 3), spinnerets ringed in black patch; legs all pale except Mt I dark, retrolateral face of F II, prolateral and retrolateral face of F III & IV darker. **Carapace:** Figs 1, 2, 4. Distinct constriction between cephalic and thoracic parts, posterior part declining very gently for anterior half and abruptly for posterior half; moderately hirsute across ocular region, very long hair just posterior to PME two very long hairs just posterior to constriction. **Sternum:** Inverted lanceolate-shaped, with two clear constrictions (Fig. 3), one between coxae II and one just anterior to coxae III, posterior half of sternum resembling an (inverted) sword. **Legs:** Formula 4132, legs very slender, few scattered trichobothria on tibiae and metatarsa right legs III and IV missing. **Chelicerae:** Eleven teeth on promargin, eight on retromargin, small proximal lobe, fang about ¾ length of chelicerae with apophysis (Figs 5–7). **Abdomen:** Elongate oval, widest ¾ along length, small anterior scuta covers about ¼ of abdomen, larger posterior scuta covering about 2/3 of abdomen, scuta divided by a very weak constriction (Figs 1–3).

**FEMALE. PARATYPE (RMCA ARA 247646).** Measurements: TL 5.14, CL 2.02, CW 0.78, CH 0.76, SL 1.12, SW 0.29, AL 3.12, AW 0.94, chelicera length 0.44, chelicera width 0.28. Legs: I: 1.16, 0.36, 0.96, 0.56, 0.36. II: 0.80, 0.34, 0.62, 0.42, 0.24. III: 0.92, 0.20, 0.68, 0.62, 0.28. IV: 1.26, 0.38, 1.04, 0.88, 0.34. Eyes: AME — 0.35, ALE — 0.18, PME — 0.05, PLE — 0.20, ORW — 1.04. **Colouration:** Pattern and shape as in the male (Figs 8–11), except as follows: carapace bright orange, chelicerae substantially reduced with nine teeth on each of promargin and retromargin, single very small anterior dorsal scuta covering about 1/7th of abdomen, abdominal bands much more pronounced as overall colour is somewhat paler, black patch around and over spinnerets also more pronounced, two pairs of long abdominal setae in anterior third. **Leg spination:** I: F = pl1, Ti = 5-5, Mt = 2-2. II: Ti = 0-2, Mt = 2-2. **Epigyne and spermathecae** as in Figs 15–18: CO margins laterally expanded triangles,
leading into very large CDs that cover about 2x the ST area, CDs with large broad coil leading to very narrow and straight ST medially, ST area complex, with three coils directed laterally before curving back and reaching the head of ST at anterior edge of epigyne with small FD pointing anteriorly.

**Myrmarachne foenisex** Simon, 1909


**MATERIAL.** D.R. Congo: 1 ♀ (RMCA_ARA 247647), Parc National de la Salonga, Monkoto WWF basecamp (20.68038 – 1.74775), 18:06h, 362 m a.s.l., 28.11. 2022, B.L. Pett.

**DISTRIBUTION.** Senegal, Guinea, Ivory Coast, Ghana, Nigeria, Gabon, D.R. Congo, Angola [WSC, 2023; present data].

**Genus Belippo** Simon, 1910

Type species: *Belippo anguina* Simon, 1901 (São Tomé Island).

*Belippo calcarata* (Roewer, 1942)

Figs 19–23.

*Myrmarachne calcarata* Roewer, 1942: 253, pl. 19, fig. 9a-b.

**Belippo calcarata:** Wanless, 1978: 11, fig. 6a–l.


**TAXONOMIC NOTES.** There is a deep, slightly recurved transverse depression midway along the epigyne (Fig. 22), with two heavily sclerotized straight-edged isosceles triangular depressions anteriorly. This distinctive epignyal character has not been illustrated or discussed in any published account on *B. calcarata*, but all other somatic and genitalic characters (see Figs 19–21, 23) match in both sexes.

**DISTRIBUTION.** Angola, D.R. Congo, Equatorial Guinea, Kenya, South Africa [WSC, 2023; present data].

**Discussion**

The Myrmarachnini fauna documented here represent the first published records of spiders from Salonga, Africa’s largest rainforest reserve (Figs 24, 25). Within Salonga, the new species *Myrmarachne salongensis* sp.n. was found at the two sites deep in the primary rainforest (Figs 24, 26). The forest has dense leaf litter, high tree canopies and many large mature


trees, with less direct sunlight penetrating to the forest floor (Figs 27, 28). The Monkoto basecamp site (the middle cluster of records in Fig. 26) is characterised by generally disturbed riparian vegetation, with some non-native plants and walkways cut through by villagers (Figs 29, 30). Perhaps it is not surprising that two species (*Belippo calcarata* and *Myrmarachne foenisex*) with very large ranges across Africa were found here.

Compliance with ethical standards

CONFLICT OF INTEREST: The authors declare that they have no conflict of interest.

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

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References


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