

A new species of the jumping spider *Flurica* Perger & Rubio, 2022 from Southwest Amazon forest (Araneae: Salticidae: Simonellini)

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Abstract

A new species of the ant-resembling jumping spider tribe Simonellini, *Flurica amazonica* sp. nov., is described from the Southwest Amazon forest in Beni Department, Bolivia. The species can be separated from its only congener *Flurica sikimira* Perger & Rubio, 2022 by the male palp lacking a dorsal tibial apophysis, the ventral tibial apophysis shorter, the embolus arising at the proximo-retrolateral side of the tegulum, and the chelicerae with three promarginal teeth. Adults of both *Flurica* species are likely mimics of the turtle ant *Cephalotes pusillus* (Klug, 1824).

Keywords: Bolivia • myrmecomorph • South America • turtle ant mimic

Introduction

The jumping spider tribe Simonellini is primarily Neotropical and includes six genera: *Cylistella* Simon, 1901, *Erica* Peckham & Peckham, 1892, *Fluda* Peckham & Peckham, 1892, *Flurica* Perger & Rubio, 2022, *Synemosyna* Hentz, 1832, and *Sympolymnia* Perger & Rubio, 2020 (World Spider Catalog 2023). Several genera of the tribe are well known for their accurate, polymorphic and species-specific ant resemblance: adults of *Synemosyna* species resemble twig ants (*Pseudomyrmex* spp.), *Erica*, *Flurica*, and females of *Fluda* are mimics of small turtle ants (*Cephalotes* spp.), and *Sympolymnia* and males of *Fluda* resemble small carpenter ants (*Camponotus* spp.) (Perger & Rubio 2023). Juveniles of *Erica* and *Sympolymnia* mimic acrobat ants (*Crematogaster* spp.) (Perger & Rubio 2023).

Despite the high potential of simonellines for mimicry research, several studies suggest that the fauna of various

Neotropical forest regions is still poorly known (Perger & Rubio 2020; Perger, Rubio & Haddad 2021). Recent surveys of ant-mimicking spiders in Bolivia revealed five simonelline species that were hitherto unknown to science (Perger & Rubio 2020, 2022, 2023), representing 83% of the species of this tribe that were discovered since 2000. These studies newly indicate that particularly Amazon forests are distinguished by a high potential for new species to be discovered. In the present contribution, an additional species of *Flurica* is described from Southwest Amazon forest in the Beni Department, Bolivia. The two specimens of the new species were collected by the third author (Höfer) in 1993, deposited in the State Museum of Natural History Karlsruhe (SMNK-ARA; curator Hubert Höfer) and illustrated by the second author (Metzner 2023) on his webpage www.jumpingspiders.com, highlighting the importance of such online resources for facilitating the description of new species.

Material & methods

The specimens of the new species were examined under a Zeiss Stemi DRC stereomicroscope. Photos of the habitus and palp were taken with a DMC5400 digital camera adapted to a Z6 APO microscope (both Leica Microsystems, Heerbrugg, Switzerland) and stacked with Helicon Focus stacking software (HeliconSoft, Kharkiv, Ukraine). The material was preserved in 75% denatured ethanol.

Morphological terms and description formats follow the recent studies on spiders of Simonellini (Perger & Rubio 2020; Perger, Rubio & Haddad 2021). Body length (BL) measurement refers to the distance from the anterior margin of the carapace to the posterior margin of the abdomen.

The following indices were calculated: 1) ACP width index = widest width of anterior carapace part / carapace length × 100; 2) PCP width index = widest width of posterior carapace part / carapace width × 100; 3) sternum index = sternum width / sternum length × 100; 4) abdomen index = widest width of posterior abdominal part / abdomen length × 100. All measurements are expressed in millimeters (to the nearest 0.1 mm) and were taken using an ocular micrometer on the microscope.

Abbreviations used in the text: AAP = anterior abdominal part, ACP = anterior carapace part, AER = anterior eye row, AME = anterior median eye, ALE = anterior lateral eye, p = prolateral, PAP = posterior abdominal part, PCP = posterior carapace part, PE = posterior eye, PER = posterior eye row, ME = median eye, MER = median eye row, r = retrolateral, RTA = retrolateral tibial apophysis, v = ventral.

The ecoregion and system affinities of the species were analysed using Navarro & Ferreira (2007) and visualized by using the geographic information system QGIS (version 2.14.3, <http://www.qgis.org/en/site>) (Fig. 1). Geographic coordinates are shown in decimal degrees of reference datum WGS84, and elevation in metres above sea level.

This published work and the nomenclatural acts it contains have been registered in Zoobank (<http://zoobank.org/References>). The LSID for this publication is: lsid:zoobank.org:pub:688E5CFE-F977-4B4B-A188-20E312701023.

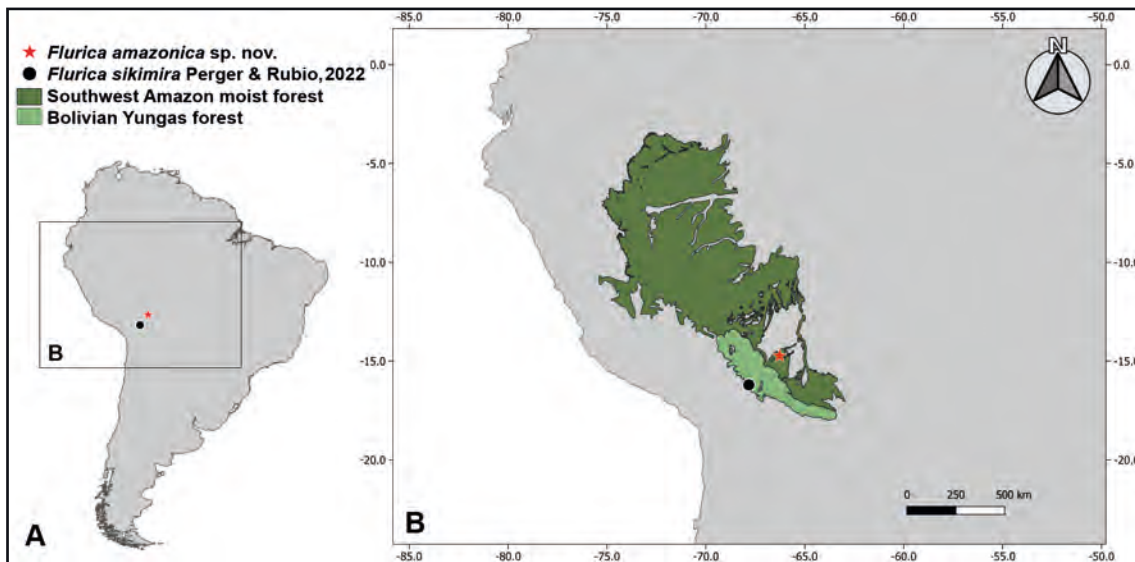


Fig. 1: Geographical and ecoregion occurrence of *Flurica amazonica* sp. nov. (red star) and *F. sikimira* Perger & Rubio, 2022 (black circle). **A** South America: location map; **B** ecoregion occurrence, according to the regionalization by Navarro & Ferreira (2007).

Tribe Simonellini Peckham, Peckham & Wheeler, 1889

Flurica Perger & Rubio, 2022

Type species: *Flurica sikimira* Perger & Rubio, 2022 (by original designation).

Diagnosis: Prolateral margin of tibia I and tarsus I without spines; vRTA very long, sabre-shaped.

Flurica amazonica sp. nov. (Figs. 2, 3A–F, 4)

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Type material: Holotype ♂, BOLIVIA: Beni Department, Ballivián Province, San Borja, Estación Biológica del

Beni, El Trapiche, -14.7368°S -66.2657°W, 168 m, 29 July 1993, Höfer, H. & Brescovit, A. D. leg., SMNK-ARA 01268.

Diagnosis: *Flurica amazonica* sp. nov. can be distinguished from its only congener *F. sikimira* by lacking a dRTA (Fig. 3F) (v. dRTA conspicuously developed, Fig. 3H), vRTA shorter, extending beyond proximal quarter of bulb (Fig. 3C) (v. extending beyond middle of bulb, Fig. 3G), embolus arising at proximo-retrolateral side of tegulum (Fig. 3C) (v. arising disto-retrolateral, Fig. 3G) and chelicera with three promarginal teeth (v. promargin toothless).

Etymology: The specific epithet *amazonica* refers to the region where the species was found.

Description of male holotype (SMNK-ARA 01268) (Figs. 2, 4): Body length 3.8; carapace length 1.60, ACP width 0.9, ACP index 56.25; PCP width 0.8, PCP index 50.0; sternum length 0.86, width 0.35, sternum index 41.0; abdomen length 2.0, AAP width 0.54, PAP width 1.0, abdominal index (with PAP) 51.4; ventral sclerite length 0.8, width 0.45. AER 0.95, AME-AME 0.05, AME-ALE 0.04, PER 0.94, MER 0.88, ME-PE 0.18. Integument dull, PAP slightly shiny, microsculpture of dorsum reticulate with separate small granules, brownish (maybe faded due to storage in alcohol); dorsum with separate, erected, simple white setae, denser along anterior margin of ACP, on PCP and AAP, and along margin of PAP, most densely in constrictions between ACP/PCP and AAP/PAP, setae laterally in these constrictions modified to broad (not feathery) scales, smaller lateral patch of similar scales behind carapace constriction, at height of posterior margin of coxae II. Carapace slightly concave anteriorly, comparably slender, elongated, sub-rectangular with lateral borders of anterior four/fifth subparallel and posterior fifth narrowing, ACP slightly broader than PCP, subquadrate, distinct dorsal constriction between ACP/PCP, ventrolateral carapace margin slightly constricted at this height; quadrangle formed by AER and PER 1.5× wider than long, AER straight, as wide as PER, AE large, in contact, occupying entire front of vertical incli-

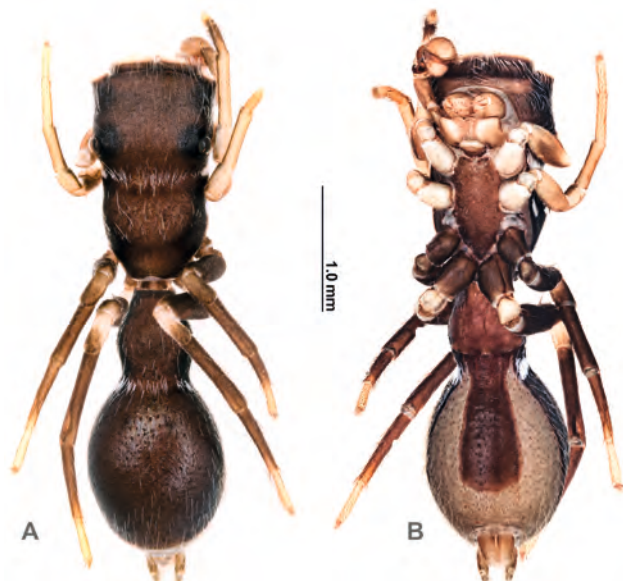


Fig. 2: *Flurica amazonica* sp. nov., holotype male (SMNK-ARA 01268). **A** dorsal view; **B** ventral view.

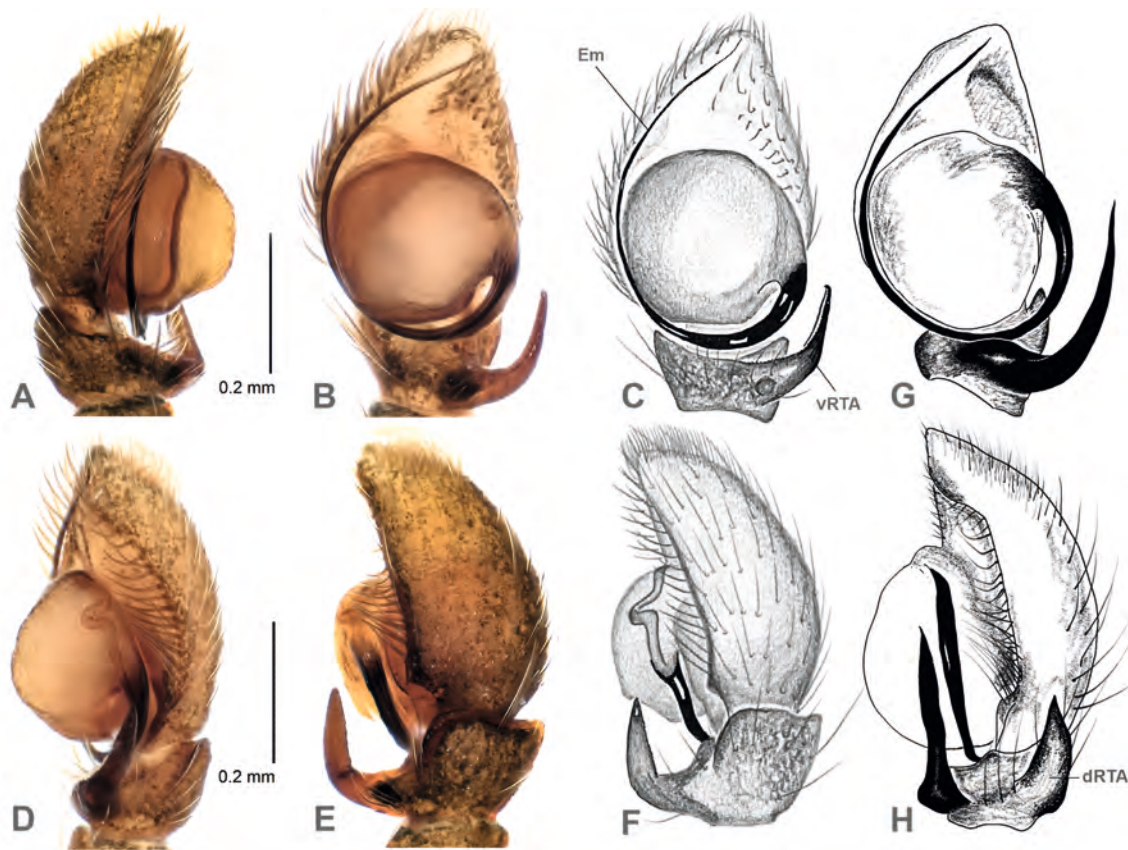


Fig. 3: Palps of *Flurica amazonica* sp. nov., male holotype (SMNK-ARA 01268) (A–F) and *Flurica sikimira* Perger & Rubio, 2022, male holotype (G–H). A prolateral view; B–C. ventral views; D retroventral view; E–F retrolateral views; G ventral view; H retrolateral view. dRTA = dorsal retrolateral tibial apophysis, Em = embolus, vRTA = ventral retrolateral tibial apophysis.

nation of face, AME about 2.3× larger than ALE; MER closer to AER than to PER. Chelicera small, 2 small retro-marginal, 3 promarginal teeth (Fig. 4B). Abdomen elongated, obovate, 20% longer than carapace, completely covered by scutum, laterally and dorsally distinctly constricted behind first third (Fig. 2A), AAP narrower than carapace, PAP orbicular, wider than carapace; epigastric sclerite covering proximal sixth of abdomen, laterally fused with dorsal scutum, ventral sclerite elongate, moderately broadening distally, not in contact with dorsal scutum (Fig. 4C). Slender and comparably short legs, in order 4,3,1,2, third and fourth pair stouter, light brown. Palp (Fig. 3A–F) with small cymbium, bulb ~50% cymbium length, suboval, embolus relatively long, arising at proximo-retrolateral side of tegulum, without complete circular revolution, terminating closely before cymbium tip, lacking pars pendula, vRTA long, extending beyond proximal quarter of bulb, sabre-shaped, dRTA absent.

Other material examined: A juvenile was collected together with the holotype male (Fig. 2) with almost exactly the same size and shape, but without a well-developed scutum. The female remains unknown.

Geographical and ecological occurrence: *Flurica amazonica* sp. nov. is so far exclusively known from the type locality in the Beni Department of Bolivia in the Southwest Amazon forest (Fig. 1). It was collected in a relatively undisturbed, continuous primary forest within the Estación Biológica del Beni (EBB). This site was chosen as a refer-

ence during an investigation of the spider fauna of forest islands in the savanna (Höfer & Brescovit 1994). The species might well be endemic to this ecoregion, as it was not collected in several other Bolivian forest ecoregions despite high sampling effort (Perger & Rubio 2020, 2022, 2023; Perger, Rubio & Haddad 2021), nor in Amazon forest sites near the Bolivian border in Acre, Brazil (*c.* 500 km linear distant from EBB), where Höfer, Brescovit and Metzner sampled spiders in several sites. The new species is possibly replaced by *F. sikimira* in Bolivian Yungas forest in the Bolivian Andes (Fig. 1). Other simonellines that have been reported from the area of Southwest Amazon forest but also occur in other Amazon forest types include *Erica eugenia* Peckham & Peckham, 1892, *Synemosyna myrmeciaeformis* (Taczanowski, 1871), and *S. nicaraguensis* Cutler, 1993 (Perger & Rubio 2022; Perger, Rubio & Haddad 2021). The simonellines *Fluda dauca* Perger & Rubio, 2023 and *Sympolymnia shinahota* Perger & Rubio, 2020 are exclusively known from the area of Southwest Amazon forest in Bolivia (Perger & Rubio 2020, 2023).

Ant mimicry: As in *F. sikimira*, the subquadrate cephalic area, dark integument and obovate, posteriorly rounded abdomen resemble minor workers of *Cephalotes pusillus* Klug, 1824, a species occurring in the area of Southwest Amazon forest (pers. obs.). For the importance of *Cephalotes*-mimicry in spiders see Perger & Rubio (2022).

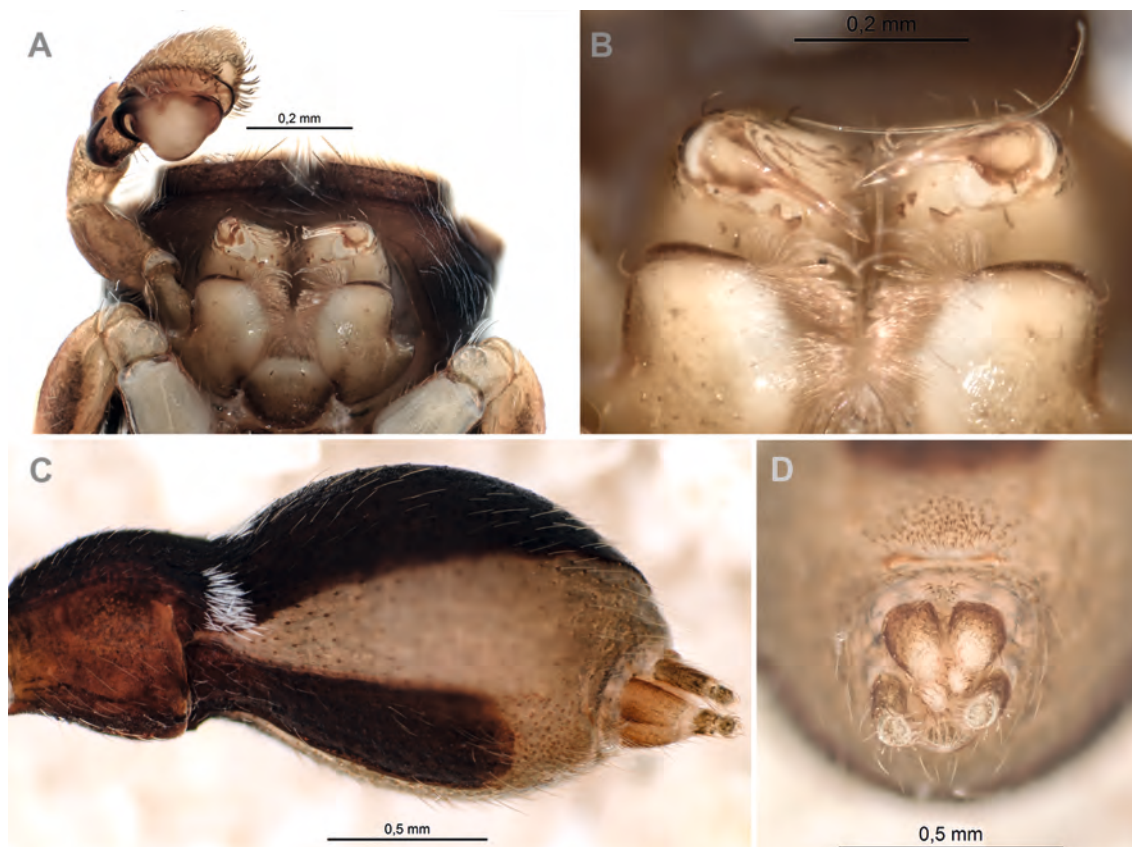


Fig. 4: *Flurica amazonica* sp. nov., male holotype (SMNK-ARA 01268). **A** cephalic area, ventral view; **B** chelicerae, ventral view; **C** abdomen, lateral view; **D** spinnerets, ventral view.

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