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The jumping spider *Tapsatella albocastanea*, a new genus and species from Argentina (Araneae: Salticidae: Freyina)

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Abstract. *Tapsatella albocastanea*, new genus and species (Araneae, Salticidae) is described from specimens recently collected in a quebrachal forest in Chaco Province, Argentina. The dorsal stripes, shape of the tegulum, presence of small spherical spermathecae and shape of the external epigynum suggest that this species is a relative of some *Wedoquella* and *Phiale*. It differs from both of these genera by the presence of a peculiar border between tegulum divisions, a different structure and arrangement of copulatory ducts, and an elongate, depressed, and much narrower carapace.

Keywords. Neotropical Aelurillini, *Phiale*, salticid, taxonomy, *Wedoquella*

INTRODUCTION

Freyina Edwards, 2015 represents a well-defined subtribe of jumping spiders within the tribe Aelurillini, a clade defined by Maddison (2015) on the basis of molecular data. The family Salticidae contains both monotypic or genera of low diversity on one hand, and speciose genera on the other (Edwards 2015). Some of these genera remain poorly defined in part because of a lack of studies of the characters distinguishing them. This is the case for *Phiale* C. L. Koch 1846 and *Wedoquella* Galiano 1984. The amount of differential information on these genera is scarce and poorly understood. The general appearance, color pattern and chaetotaxy of *Wedoquella* are very similar to those of *Phiale* and for some time *Wedoquella* species were placed in the genus *Phiale* (Galiano 1984; Rubio et al. 2019). However after the characters of *Phiale* were delimited through the study of the female holotype and male specimens it became clear that the *Wedoquella* species belonged to a different genus (Galiano 1978, 1981a, 1981b, 1984). At present a combination of characters is needed to diagnose, though weakly, each of these two genera (Edwards 2015; Rubio et al. 2019). For example, species of *Wedoquella* can be separated from *Phiale* by the presence of a broadly angulate dorsolaterally-projecting dorsal RTA or dorsal prong of the RTA (Edwards 2015). However, the last species described in this genus lacked the extra tibial apophysis found in previously known species of *Wedoquella*, and were assigned to a second group within that genus (the *apnnea* group), making the diagnostic limits of that genus more difficult to interpret (Rubio et al. 2019). This supports the view that our new species should be placed in a separate genus for stability.

Here we describe a new salticid species from Argentina, belonging to a new genus diagnosed by characteristics of copulatory structures and body morphology, related to *Wedoquella* and *Phiale*. Type specimens for this species were collected in an expedition to the central part of Chaco Province.

MATERIALS AND METHODS

Specimens examined are deposited in the following institutions: CNNE, Colección de Artrópodos de la Facultad de Ciencias Exactas y Naturales y Agrimensura, Universidad Nacional del Nordeste (G. Avalos), and IBSI-Ara, Instituto de Biología Subtropical, Universidad Nacional de Misiones (G. D. Rubio).

Taxonomy

Morphological terms, abbreviations, definitions and some measurements follow recent studies on freyine salticids (Edwards 2015; Rubio et al. 2019). Female genitalia were dissected as described by Levi (1965), examined after digestion in hot ~15% NaOH solution and cleared in clove oil to examine their internal structure. Temporary preparations were observed and photographed using a Leica DM500 compound microscope and a Leica M60 stereomicroscope. Structures were sketched from incident light photograph models using a computer system for drawing and treatment of the image (Wacom digitizer tablet with GIMP, free software). Measurements were taken directly from a microscope ocular lens with ocular micrometer and are expressed in millimeters. Photographs of live spiders were taken using a Nikon D80 digital camera with a Micro-Nikkor 85 mm lens.

Comparative material

- *Wedoquella denticulata* Galiano, 1984: 1 male (IBSI-Ara 0496; tiss.s. 0496), from Argentina, Misiones, General Manuel Belgrano, Reserva Karadya (S25.859°, W53.960°), 20 November 2015, Baigorria coll.; 1 male (IBSI-Ara 1213), same location and collector, 15 October 2018; 2 females (IBSI-Ara 1460), Misiones, Leandro N. Alem, Estación Experimental Agropecuaria Cerro Azul (S27.654°, W55.435°), 20 December 2019, Rubio & Stolar coll.

- *Wedoquella punctata* (Tullgren, 1905): 1 male (IBSI-Ara 0844; tiss.s. 0844), from Argentina, Chaco, Capitán Solari, Parque Nacional Chaco (S26.807°, W59.607°), 24 October 2016, Rubio & Meza-Torres coll.; 1 female (IBSI-Ara 1001; tiss.s. 1001), Misiones, Leandro N. Alem, Estación Experimental Agropecuaria Cerro Azul (S27.654°, W55.435°), 20 October 2017, Rubio coll.

- *Phiale gratiosa* C. L. Koch, 1846: 1 female (IBSI-Ara 0168; tiss.s. 0168), from Argentina, Misiones, General Manuel Belgrano, San Antonio, Reserva Natural Estricta San Antonio (S26.019°, W53.791°), 22 October 2013, Rubio coll.

Acronyms

ALE, anterior lateral eye; AME, anterior median eye; CD, copulatory duct; CO, copulatory opening; EB, embolus base; FD, fertilization duct; pRL, proximal retrolateral lobe of TDD; dRTA, dorsal retrolateral tibial apophysis; RTA, retrolateral tibial apophysis; vRTA, ventral retrolateral tibial apophysis; S, spermophore; Sp, spermatheca; Spc, spicules; TBD, tegulum basal division; TDD, tegulum distal division.

RESULTS/SYSTEMATICS

Family SALTICIDAE Blackwall, 1841
Subfamily SALTICINAE Blackwall, 1841
Tribe AELURILLINI Simon, 1901
Subtribe FREYINA Edwards, 2015

Tapsatella Rubio & Stolar, **gen. nov.**

Type species. *Tapsatella albocastanea* **sp. nov.**, by monotypy.

Etymology. The “tapsat” noun means “quebracho forest” (quebracho: *Schinopsis balansae* Engl. 1885) in the language of the Qom people (one of the largest indigenous groups in Argentina that historically inhabited the region known as the Pampas of the Central Chaco) and the diminutive Latin suffix “-ella”. Gender feminine.

Remarks. Spiders of the this new genus share many characteristics with *Wedoquella* species and, secondarily, with *Phiale* species. However, these characteristics are not uniformly present in all species of both genera. For example, the new species of *Tapsatella* **gen. nov.** resembles *W. denticulata* Galiano, 1984 and *W. punctata* (Tullgren, 1905) in the presence of a striped dorsal pattern (Figures 1-2), *W. denticulata* by the thickness of the embolus, and *W. punctata* in with respect to structure of the tegulum and the presence of a less oblique border between the TBD and TDD than in the other *Wedoquella* species (Figures 3A, 4A-B). The females of *Tapsatella* **gen. nov.** and these *Wedoquella* species are similar with respect to the presence of small spherical spermathecae (Figures 3I-J, 4D-E). The small spherical spermathecae and the general structure of the epigyne are also shared with some species of the *Phiale mimica* group, including *P. mimica* (C. L. Koch, 1846) and *P. ortrudae* Galiano, 1981.

Differential diagnosis. *Tapsatella* **gen. nov.** is distinguished from *Wedoquella* by its much longer and sclerotized embolus, the square shape of its tegulum, and the transverse (not oblique) border between the TBD and TDD, a feature shared with most *Phiale*. *Tapsatella* can be distinguished from both *Wedoquella* and *Phiale* by the greater distance of COs from the epigastrium, the structure and arrangement of CDs (anterior half with very wide lumen, conspicuously narrowing in the posterior half near the spermathecae), their more elongate and depressed carapace, and the position of the ALE (almost contiguous to the AME) in their much narrower carapace.

Description. Medium sized salticids (total length 5.44-7.10). Females larger than males. Both sexes with a similar coloration, except that the cephalothorax and forelegs of the male are slightly darker. Carapace longer than wide, dark brown, male cephalic region uniform with some scattered white setae (conspicuous in life), female with two darker thin longitudinal stripes (in life these stand out on a cover of white hairs), eyes on a wide blackish brown band; smooth thoracic slope, with a lighter longitudinal middle band with white hairs in life (continued throughout the carapace in female), wide white marginal bands continued from the clypeus. Clypeus covered with numerous long white hairs. Each paturon of the chelicerae dark mahogany brown, with one tooth on the promargin and one tooth on the retromargin, the prolateral closest to the joint with the fang. Sternum light brown, with abundant white translucent hairs. Legs hairy, brown the first pair blackish brown in the male. Abdomen pale, covered with white hairs and bearing two blackish or brown longitudinal bands on the dorsum, each with a conspicuous darker edge. Male with a small dorsal scutum. Freyine copulatory structures (see species description).

Composition. Only the type species, *T. albocastanea* **sp. nov.**

Tapsatella albocastanea Rubio, Stolar & Nadal, **sp. nov.**
(Figures 1-4)

Material examined. Types: Male holotype (IBSI-Ara 0843; tiss.s. 0843) from Argentina, Chaco: Capitán Solari, Parque Nacional Chaco (S26.807°, W59.608°), habitat "quebrachal-ralera" (Dry Chaco savanna), 24 October 2016, G.D. Rubio & E.I. Meza-Torres coll. Female paratype (IBSI-Ara 0842; tiss.s. 0842) same data as holotype. Other material: 1 male (CNNE 9212) from Chaco: Presidencia de la Plaza, Estancia Los Alisos (S27.086°, W59.764°), habitat grassland, 17 October 2007, Avalos et al. coll.

Etymology. The species group name "albocastanea" is a Latin compound adjective that means "white and brown", due to the color pattern of these specimens.

Diagnosis. As for the genus.

Description. Male (holotype) illustrated in Figures 1A-B, 2A-C, 3A-G and 4A-C. Total length: 5.44. Carapace length: 2.44; width: 1.57. Carapace dark brown, cephalic region uniform with some scattered white setae (conspicuous in life), eyes (except AME) bordered by blackish scales, thoracic slope with a lighter longitudinal middle stripe (with white hairs in life), wide white marginal bands continued from the clypeus. Chelicerae dark mahogany brown, with one promarginal and one retromarginal tooth. Sternum light brown, with abundant white translucent hairs. First pair of legs stout, hairy, dark brown (darker in life), rest of the legs light brown. Abdomen length: 3.00, width: 1.60, coloration pale brown (covered with whitish hairs in life), with two dark brown longitudinal bands on the dorsum, each with conspicuous darker edges. Dorsal scutum weakly sclerotized, hard to see, barely darker on the heart region. Palp: femur stout, tibia with a conspicuous ventral prong of RTA (vRTA) wide base, narrower towards the apex, triangular-shaped. Tegulum clearly divided, with the border between TBD and TDD transverse in ventral view. TDD with pRL wide, short and angled edges. Embolus almost straight, well-sclerotized with conspicuous base, not bent at the EB. Numerous spicules (Spc), or tiny spike-like structures following Edwards (2015) near the EB (Figures 3F-G). TBD with a short and curved visible section of the S.

Female (paratype) illustrated in Figures 1C-E, 2D-F, 3H-J, 4D-E. Total length: 7.10. Carapace length: 2.90, width: 1.82. Carapace dark brown with two darker longitudinal stripes (in life these stand out on a cover of white hairs), eyes on a blackish brown broadband, thoracic slope with a lighter longitudinal middle band (with white hairs in life, continue throughout the carapace), wide white marginal bands continued from the clypeus. Chelicerae as in male. Sternum as in male. First pair of legs slightly stronger than the rest, brown, hairy. Abdomen length: 4.20, width: 2.40, with two blackish brown longitudinal bands on the dorsum (in life they clear up on the heart region). Epigyne: epigynal plate conspicuous, longer than wider, with two anterolateral circular CO; CD with two different stretches, one anterior (thicker) and the other posterior (thinner) connecting to a small spherical spermatheca, FD anterior to spermatheca.

Natural history. Considering that all specimens were found on grasses in "quebrachal-ralera" (*Schinopsis balansae*), the species *T. albocastanea* **sp. nov.** may be typical of this habitat.

Distribution. Only known from Chaco Province in northeastern Argentina.

Remarks. The specimens of the species described here, *Tapsatella albocastanea* **sp. nov.**, have an appearance similar to *W. denticulata* and *W. punctata*, with a striped dorsal pattern. The femur is stout and arched dorsally as in other *Wedoquella*, although also similar to *Pachomius* Peckham & Peckham, 1896 or *Phiale*. The dorsal broadly angulate prong of the RTA (dRTA) and TDD does not have the oblique appearance of *Trydarssus* Galiano, 1995 as do *Wedoquella*. The female has small and spherical spermathecae as in *W. denticulata* and *W. punctata*, somewhat similar to some *Phiale* and to *Trydarssus nobilitatus* (Nicolet, 1849), but the posterior edge of the epigyne is not as bilobed as in *Trydarssus*. On the other hand, the embolus with spicules near the base is similar to *Pachomius* but this has not been important to the delimitation of genera since Edwards (2015) observed a range of variation in this structure so great that the inclusion of otherwise similar species that completely lack, or do not lack, spicules does not seem unreasonable. The placement of *T. albocastanea* **sp. nov.** in an existing genus is problematic, and although we think that *Wedoquella* is the genus that shares the most characteristics with *Tapsatella*, we also think that it is more stable to separate the two genera.

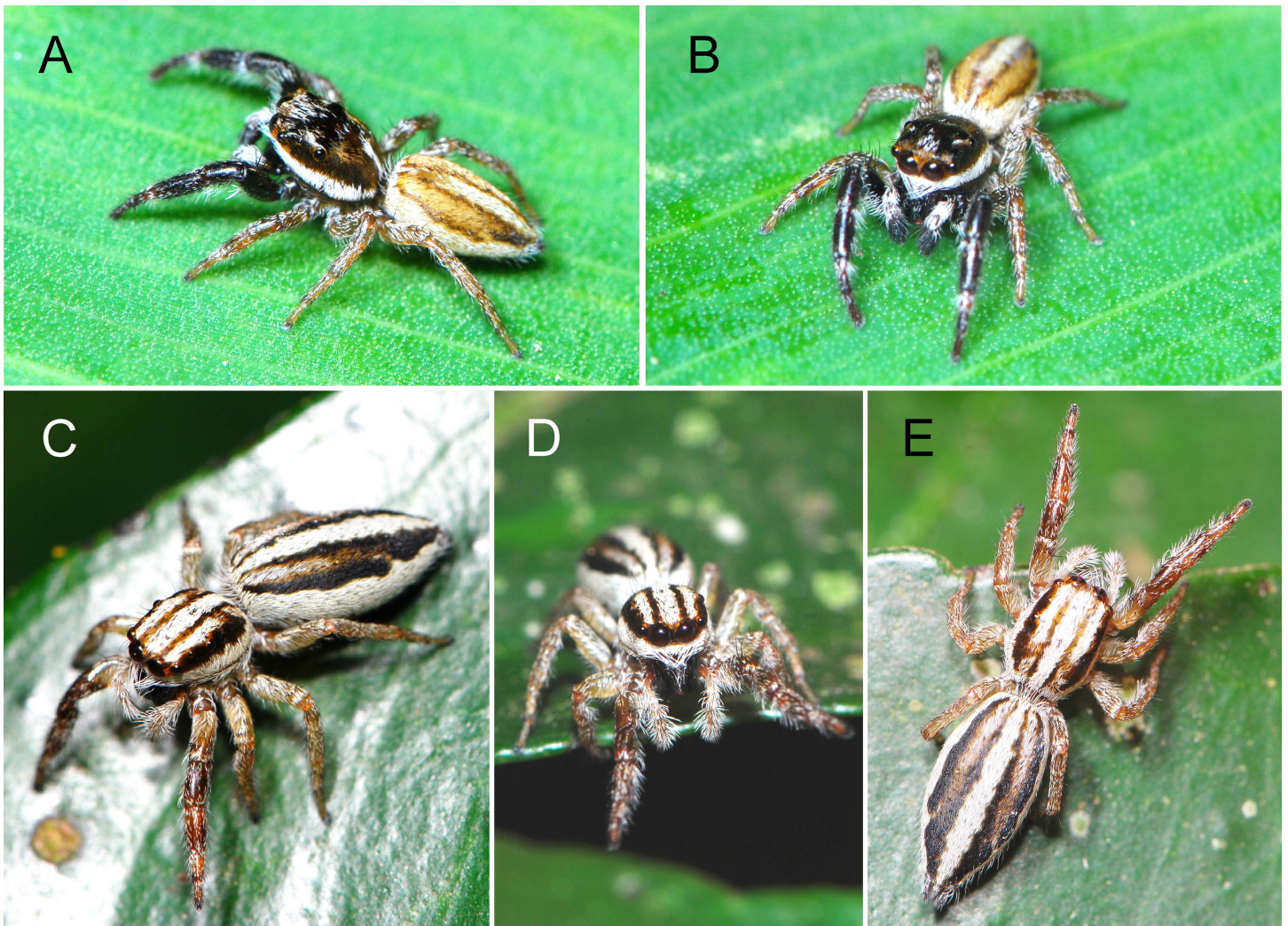


Figure 1. Habitus in nature of *Tapsatella albocastanea* **sp. nov.** from "quebrachal-ralera" in Chaco National Park, Argentina. A-B, Male (holotype). C-E, Female (paratype).

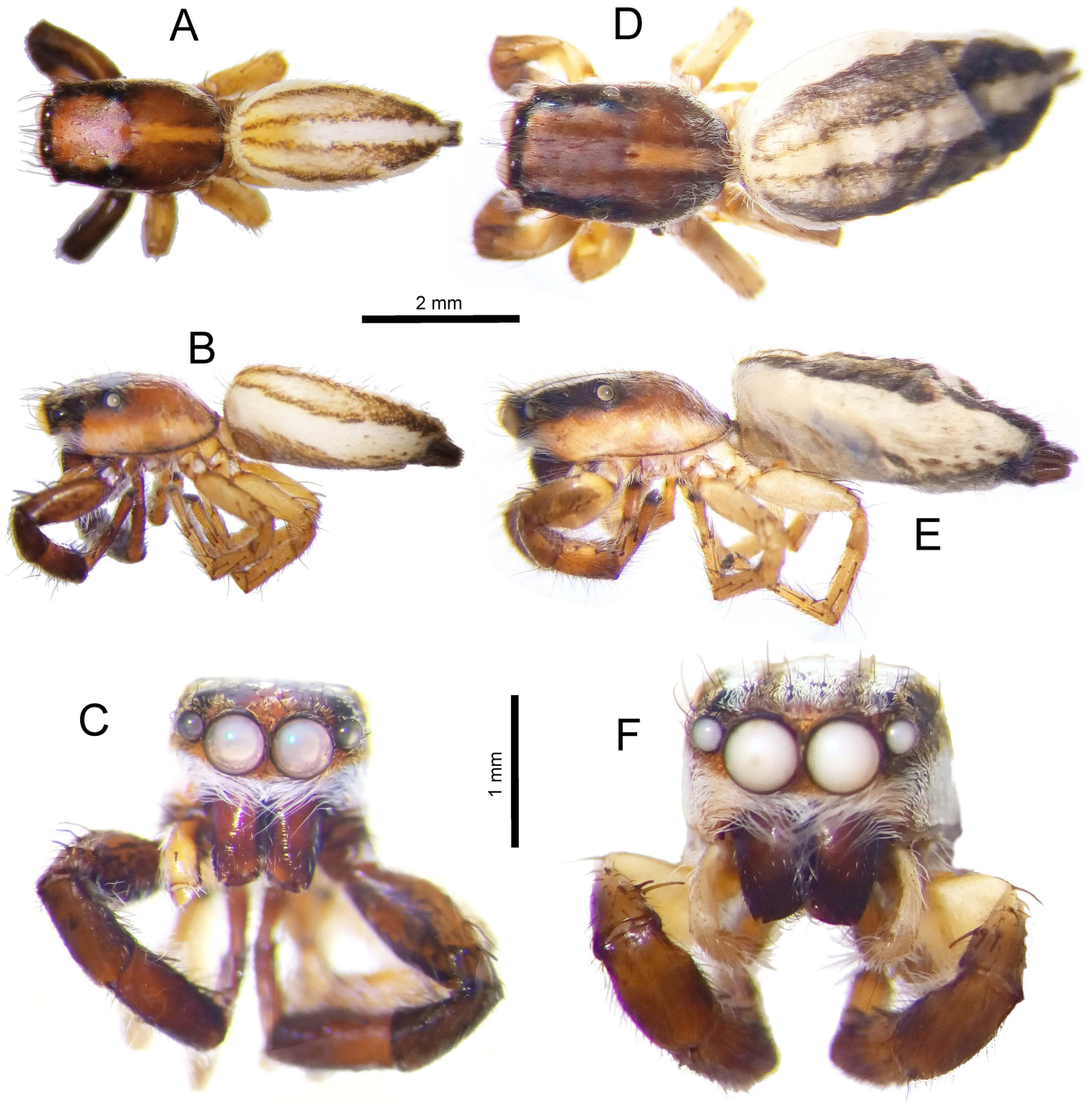


Figure 2. Preserved specimens of *Tapsatella albocastanea* sp. nov. A–C, Dorsal, lateral and frontal views of male (holotype). D–F, Dorsal, lateral and frontal views of female (paratype).

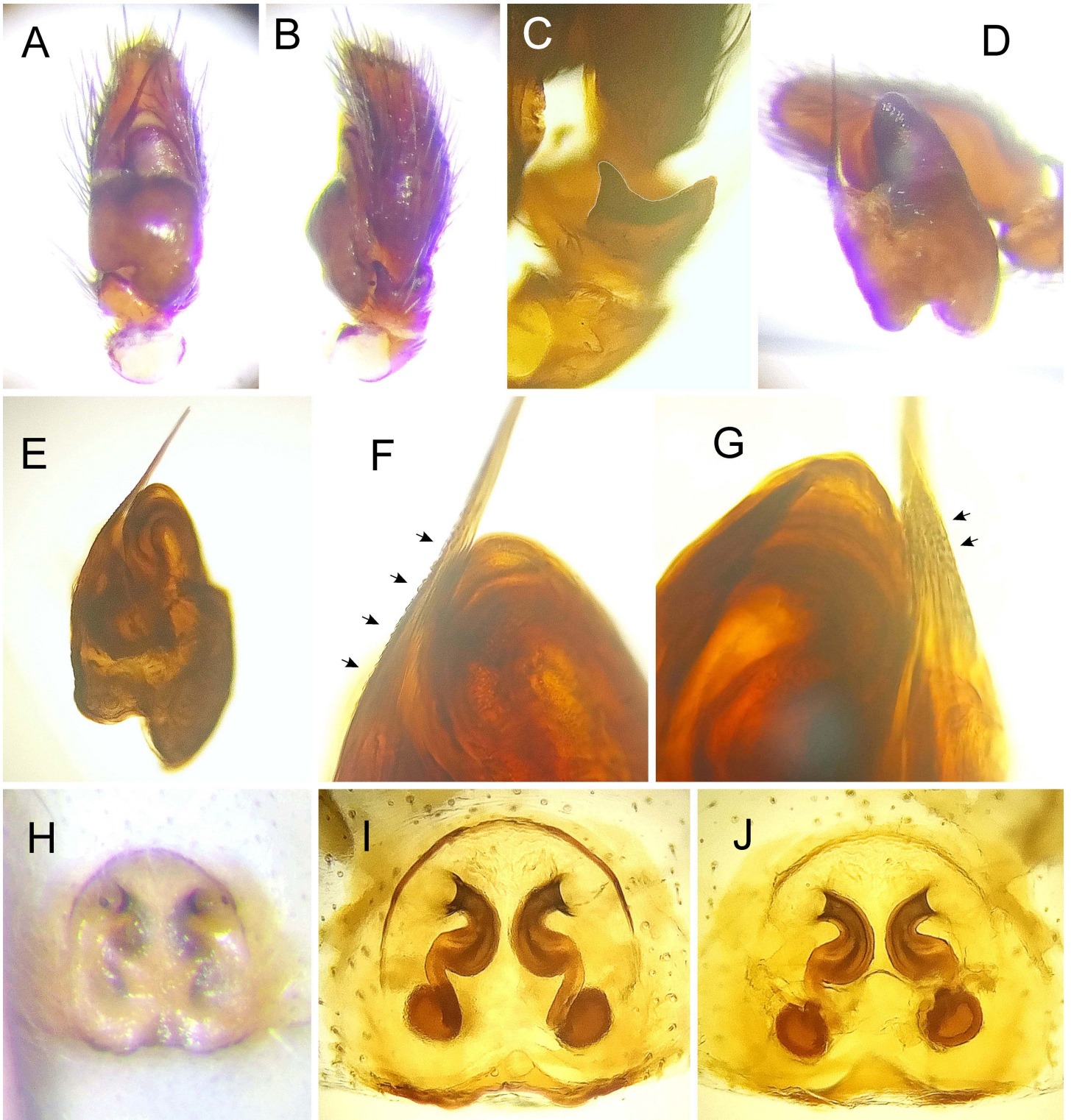


Figure 3. Sexual structures of *Tapsatella albocastanea* sp. nov. **A-G**, Male palp (holotype). **A**, Ventral view. **B**, Retrolateral view. **C**, Detail of RTA. **D-E**, Copulatory bulb. **F-G**, details of Spc (arrows) in ventral and dorsal views. **H-J**, Female epigyne (paratype). **H**, Ventral view. **I**, Cleared ventral view. **J**, Cleared dorsal view.

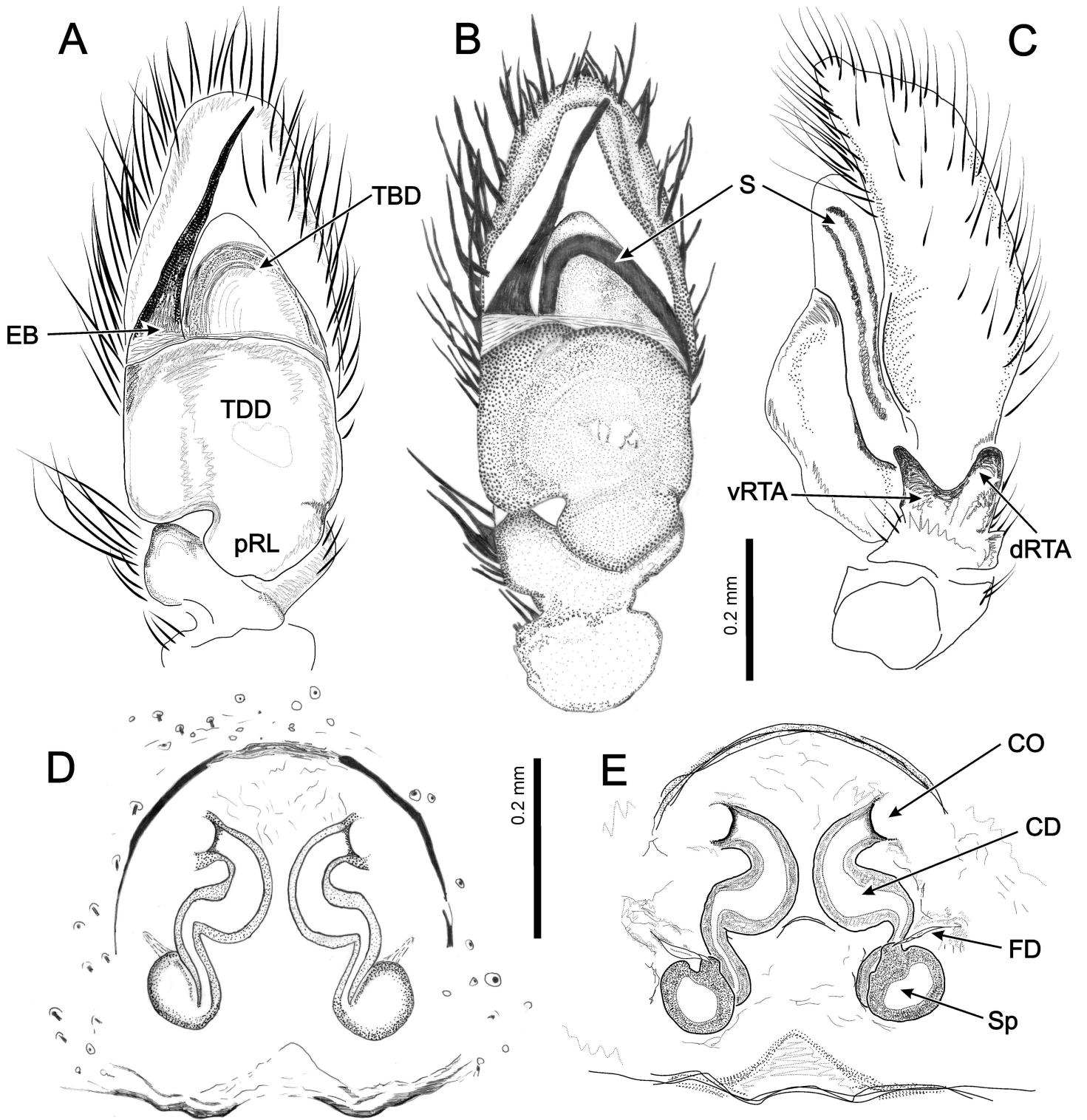


Figure 4. Sexual structures of *Tapsatella albocastanea* sp. nov., drawings. **A-C**, Male palp (holotype). **A-B**, Ventral views. **C**, Retrolateral view. **D-E**, Female epigyne (paratype). **D**, Cleared ventral view. **E**, Cleared dorsal view

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