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|---------------------|---|
| <b>Zeitschrift:</b> | Contributions to Natural History : Scientific Papers from the Natural History Museum Bern |
| <b>Herausgeber:</b> | Naturhistorisches Museum Bern   |
| <b>Band:</b>        | - (2009)  |
| <b>Heft:</b>        | 12/3  |
| <b>Artikel:</b>     | A review of the spider genus Tengella (Araneae: Tengellidae)                              |
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| <b>DOI:</b>         | <a href="https://doi.org/10.5169/seals-787015">https://doi.org/10.5169/seals-787015</a>   |

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# A review of the spider genus *Tengella* (Araneae: Tengellidae)

Norman I. Platnick

## ABSTRACT

Contrib. Nat. Hist. 12: 1071–1080.

A new species, *Tengella thaleri*, is described from a cave in San Luis Potosí, Mexico, and compared with: the poorly known type species of the genus, *T. perfuga* DAHL (from an unknown locality in South America); the better known Costa Rican species, *T. radiata* (KULCZYŃSKI); and the only previously known Mexican species, *T. albolineata* (F. O. P.-CAMBRIDGE), which may be misplaced in the genus.

## Introduction

The spider genus *Tengella* DAHL has played a pivotal role in discussions of spider phylogeny since Lehtinen's (1967) treatment of the problems posed by cribellate taxa in general. The genus was originally established, as a zoropsid, for *Tengella perfuga* DAHL, 1901, a species described only from females from an unspecified locality in South America. Although soon selected as the type genus of the family Tengellidae (by Dahl 1908), these spiders have remained poorly known. Views on their relationships are widely disparate; for example, in the analysis by Silva (2003, fig. 6) *Tengella* clustered most closely with *Zorocrates* SIMON, then with the other current zorocratids, and, more distantly, with *Zoropsis* SIMON, whereas in the more recent analysis by Raven & Stumkat (2005, fig. 2), the genus was far removed from each of those taxa. All the modern phylogenetic studies have been based on specimens from Costa Rica, but the generic placement of those specimens has been tentative, because of uncertainty about the identity of the type species.

Although Lehtinen (1967) published some comments and synonymy concerning that type species, the revisionary study of the genus presented by Wolff (1978) indicated that "Dahl used the type to study internal anatomy; the specimen should be in the Berlin Museum but is lost" and concluded that

"Until specimens of *T. perfuga* are found, the status of *Tengella* and Tengellidae are in doubt, though these names are preferred over other unrecognizable groupings."

When offered the opportunity to contribute to this volume, it seemed appropriate to try to tackle some of these problems. Over the last decade, our colleague Dr. Konrad Thaler became increasingly interested in some of the larger cribellate spiders that impinge on discussions of *Tengella* and its relationships, especially the zoropsids (see, for example, Thaler & Knoflach 1998; Thaler & al. 2006). It therefore seems fitting to dedicate this paper to him; those of us accustomed to ready access to his knowledge, contributions, and engaging personality greatly miss those encounters, which always enlivened the triennial international congresses of arachnology.

## Material and Methods

Wolff (1978) indicated that the type species "*Tengella perfuga* DAHL, 1901 is known only from the original description." This statement was presumably based on an unsuccessful attempt to borrow the type specimens from their depository, the Museum für Naturkunde at the Humboldt-Universität in Berlin. The statement seems odd, since Lehtinen (1967) apparently examined an adult female in the Berlin collection, and provided an epigynal illustration seemingly based on that specimen. Perhaps Lehtinen borrowed the types and had not returned them to Berlin by the time of Wolff's study, but in any case a request to the current curator of that collection, Dr. Jason Dunlop, promptly resulted in their (re)discovery and loan. Access to these specimens has been crucial to this reconsideration of the genus and its limits, and is much appreciated.

Material was examined from the collections of the

- AMNH American Museum of Natural History
- BMNH Natural History Museum, London
- CAS California Academy of Sciences
- USNM National Museum of Natural History, Smithsonian Institution
- ZMB Museum für Naturkunde at the Humboldt-Universität in Berlin

Leg spination is given as three numbers, indicating spine numbers in the proximal, median, and distal third of the respective leg segment.

Further abbreviations:

|   |              |
|---|--------------|
| d | dorsal       |
| p | prolateral   |
| r | retrolateral |
| v | ventral      |

## Results

### ***Tengella* DAHL**

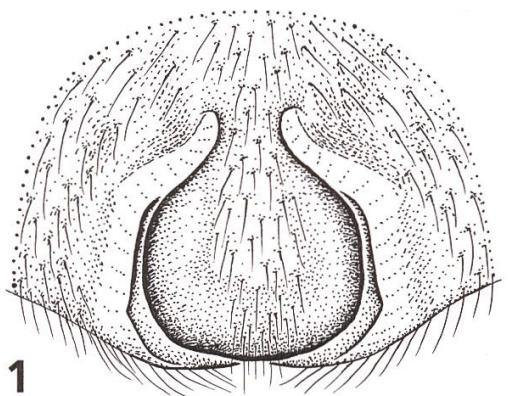
*Tengella*; Dahl 1901: 251 (type species by monotypy *Tengella perfuga* DAHL).  
*Metafecenia* F. O. P.-CAMBRIDGE, 1902; F. O. P.-Cambridge (1902): 356 (type species by original designation *Metafecenia albolineata* F. O. P.-CAMBRIDGE).  
First synonymized by Lehtinen (1967): 248.

The morphology of the genus has been discussed by Lehtinen (1967), Wolff (1978) and Griswold & al. (2005), and treated in detail in phylogenetic matrices by Griswold (1993), Silva (2003), Raven & Stumkat (2005) and Griswold & al. (2005). Specimens can readily be distinguished from those of the other New World genera currently assigned to the Tengellidae by the presence of a cribellum and calamistrum. Observations on the natural history and web symbionts of a Costa Rican species were presented by Eberhard & al. (1993).

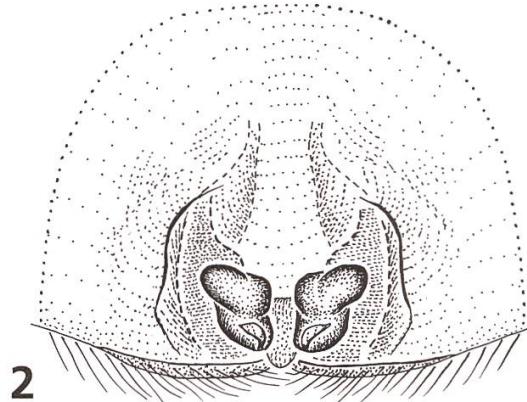
### ***Tengella perfuga* DAHL (Figs. 1, 2)**

*Tengella perfuga*; Dahl (1901): 252 (two female syntypes from "Süd-Amerika?" in ZMB, examined). – Lehtinen (1967): 268, fig. 83 (female).

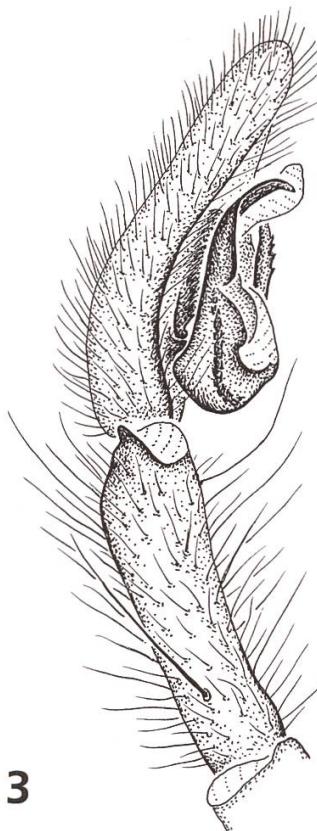
As indicated by Wolff (1978), Dahl used one of the syntypes (ZMB 34656) for studies of internal anatomy, and that specimen is in poor condition. The other female syntype (ZMB 34657), however, is fully usable, and detailed examination of its epigynum (Figs. 1, 2), including the removal of mating plugs that obscured its structure, indicates that Wolff was correct in rejecting Lehtinen's synonymy of the Costa Rican species *Metafecenia radiata* KULCZYŃSKI with *T. perfuga*. Although similar, the females of *T. perfuga* can eas-



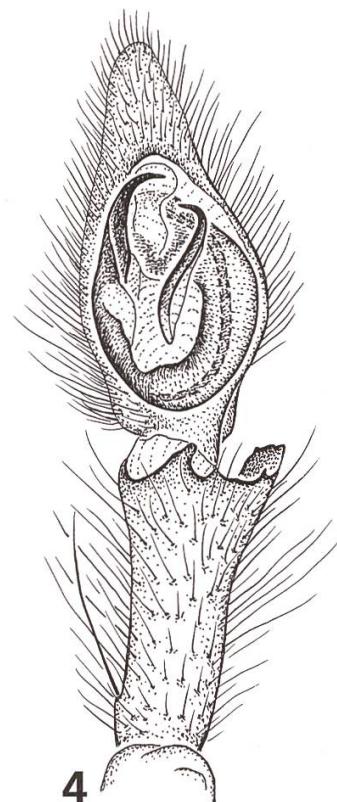
1



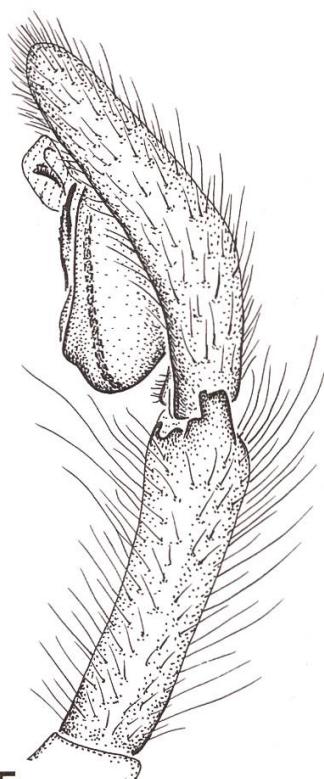
2



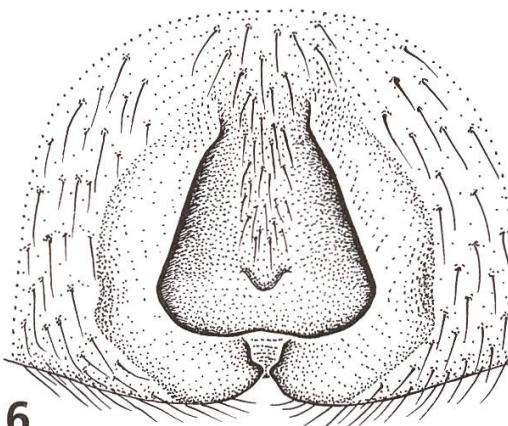
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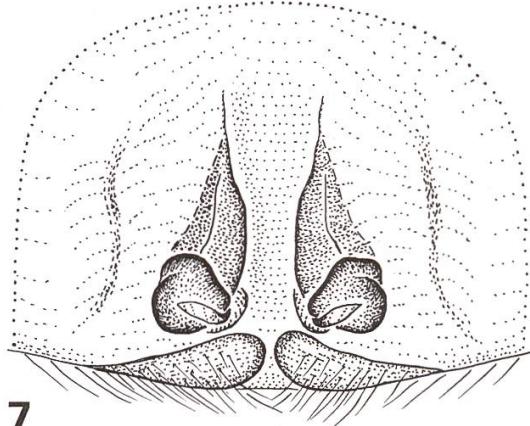
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6



7

Figs. 1-7. – 1, 2: *Tengella perfuga* DAHL; – 3-7: *T. radiata* (KULCZYNKI); – 1, 6: Epigynum, ventral view; – 2, 7: Same, dorsal view; – 3: Left male palp, prolateral view; – 4: Same, ventral view; – 5: Same, retrolateral view.

ily be distinguished by their anteriorly much broader epigynal septum. Some records at ZMB suggest that the types may have come from Brazil, but there is no label currently with the specimens that corroborates that suggestion, and no modern specimens of the genus are known in Brazilian collections (A. Brescovit, in litt.). Given what is now known of the genus, it seems more likely that the species is actually from Colombia.

### ***Tengella radiata* (Kulczyński) (Figs. 3–7)**

*Metafecenia radiata*; Kulczyński (1909): 447, pl. 22, fig. 18 (female holotype from "Costarica: Sipurio de Talamanca", may be in Warsaw, not examined).

*Tengella perfuga*; Lehtinen (1967): 268 (synonymy, rejected).

*Tengella radiata*; Wolff (1978): 140, figs. 1–5 (male, female).

Although neither Lehtinen (1967), Wolff (1978), nor I have been able to examine the holotype, this species is relatively well known, thanks to Wolff's redescription (based on modern specimens from Costa Rica). Because Wolff provided only a ventral view of the male palp and of the female epigynum, more detailed illustrations are presented here.

New Records: Costa Rica: Guanacaste: several km N Tilaran, Aug. 12, 1983, rotting logs in dense forest and pasture, elev. 700 m (F. Coyle, J. Carico, AMNH), 1 ♀. Heredia: La Selva Research Station, 10° 26' N, 84° 02' W, Feb. 11, 1976 (V. Roth, B. Schroepfer, AMNH), 1 ♀, Jan. 12, 1986 (J. Coddington, USNM), 2 ♀, May 1, 1994 (G. Hormiga, USNM), 1 ♀. San Jose: San Antonio de Escazu, 9° 56' N, 84° 08' W, Mar. 28–31, 1989 (J. Coddington, USNM), 1 ♂.

### ***Tengella thaleri* sp. nov. (Figs. 8–14)**

Types: Male holotype from Cueva de La Selva, 3 miles west of Xilitla, San Luis Potosí, Mexico (Nov. 26, 1963; T. Raines), and female allotype from the same locality (Nov. 25, 1964; T. Raines, B. Bell), deposited in AMNH.

**Etymology:** The specific name is a patronym in honor of the late Dr. Konrad Thaler, in recognition of his many contributions to our knowledge of cribellate and other spiders.

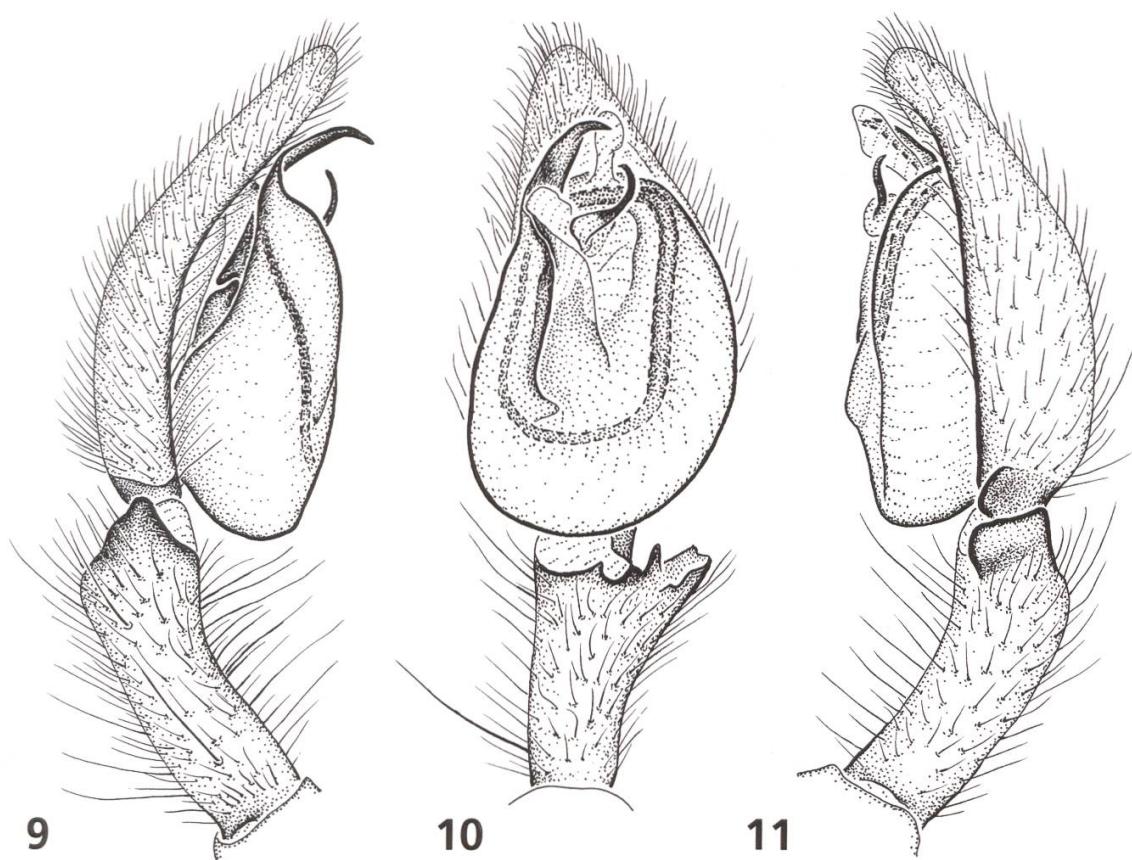
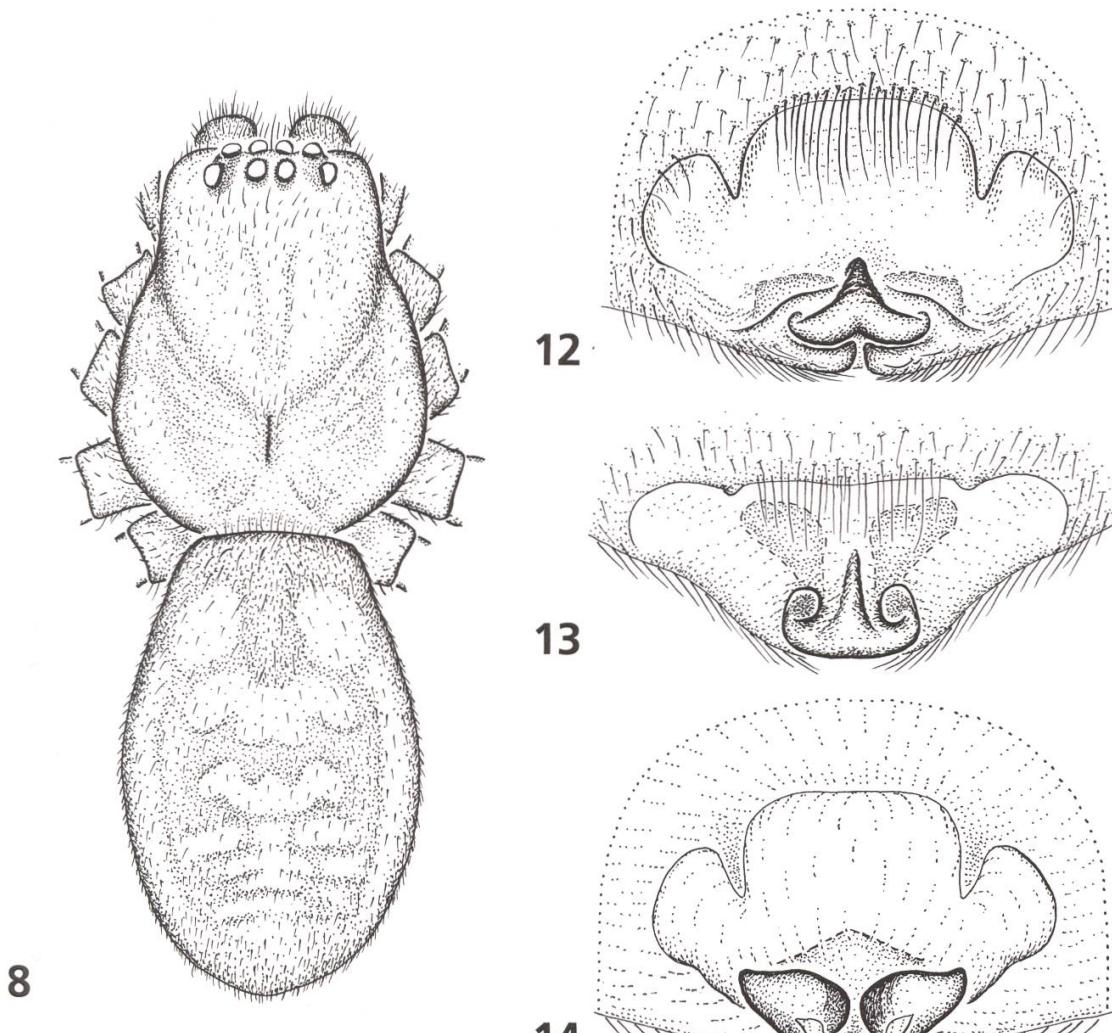
**Diagnosis:** Males resemble those of *T. radiata* but can easily be distinguished by the presence of an inner lobe on the retrolateral tibial apophysis and the absence of sharp denticles on the median apophysis (fig. 10); females

differ from those of the other species in having the epigynum deeply excavated (Figs. 12–14).

Male: Total length 6.0 mm; carapace light brown, with darker markings in two longitudinal, paramedian bands (Fig. 8); abdomen mottled brownish gray, with vague chevron pattern; legs pale yellow proximally, darker distally, femora with three darkened bands. Carapace oval, widest at rear of coxae II, abruptly narrowed at level of palpi to slightly more than half of maximum width; thoracic groove long, longitudinal, deep; surface coated with short, pale, recumbent and fewer, longer, erect dark setae most numerous in ocular area; eight eyes in two rows; from above, both eye rows slightly recurved; from front, anterior row slightly recurved, posterior row slightly procurved; anterior median eyes round, smallest; other eyes oval, subequal, with canoe-shaped tapeta; anterior median eyes separated by roughly their radius, about as far from anterior laterals; posterior medians separated by roughly their radius, much farther from posterior laterals; lateral eyes of each side separated by less than their diameter; median ocular quadrangle wider in back than in front, wider in back than long; clypeal height about twice diameter of anterior median eyes, corners of clypeus with rebordered margins that overlie cheliceral boss; chilum broad, anteriorly incised along midline. Chelicerae vertical, anterior surface with few, erect, very long setae; promargin with three teeth situated at proximal end of fang furrow, median tooth largest, retromargin with four larger, more distally situated, equally spaced teeth; very short, narrow, I-shaped posterior sclerite present, separating chelicerae at base. Labium long, distally invaginated at middle, proximally notched at sides, reflexed at about 70° angle relative to sternum. Endites rectangular, distally slightly convergent, laterally invaginated at about midlength, with anteromedian scopula and anterolateral serrula consisting of long, single row of teeth. Sternum rounded, without extensions to or between coxae, narrowed opposite anterior edge of each pair of coxae; surface with few, erect setae; posterior margin not extending between coxae IV but almost fused to extremely narrow, long, ventral pedicel sclerite.

Leg formula 1423. Leg spination (only surfaces bearing spines listed): femora: I d1-1-1, p0-0-2, r1-1-1; II d1-1-1, p1-1-1, r1-1-1; III d1-1-1, p1-1-2, r1-1-1; IV d1-1-1, p1-0-1, r0-0-1; tibiae: I p0-1-1, v2-4-2, r0-1-0; II p0-1-1, v2-4-2, r0-1-1; III d1-0-1, p0-1-1, v2-2-2, r0-1-1; IV d1-0-0, p0-1-1, v2-2-2, r0-1-1; metatarsi: I p0-1-1, v2-2-1r, r0-1-1; II p0-1-1, v2-2-1r, r1-1-1; III p1-1-2, v2-2-1r, r1-1-2; IV p1-1-2,

**Figs. 8–14.** *Tengella thaleri*, sp. nov. – 8: Carapace and abdomen, dorsal view; – 9: Left male palp, prolateral view; – 10: Same, ventral view; – 11: Same, retrolateral view; – 12: Epigynum, ventral view; – 13: Same, oblique posterior view; – 14: Same, dorsal view.



v2-2-1r, r1-2-2; tarsi with three claws, without claw tufts, superior claws with numerous weak teeth, most distal teeth largest, inferior claws with single tooth; tarsi without thick ventral scopulae; distal segments with relatively few trichobothria, in two rows; all trochanters strongly notched; males without tibial crack; metatarsi without preening combs; calamistrum weak, confined to proximal one-third of length of metatarsi IV.

Abdomen without anterior or dorsal scutum; anterior lateral spinnerets large, composed of two articles, proximal article expanded anteromedially; posterior median spinnerets composed of one article, small, triangular; posterior lateral spinnerets composed of two articles, distal article about one-third as long as proximal article; cibellum broad, divided.

Male palp with patella slightly widened distally, tibia moderately long, with broad retrolateral tibial apophysis bearing inner prong (Figs. 10, 11); cymbium without dorsal thick patch of setae; subtegulum and tegulum with interlocking lobes (Fig. 9); median apophysis with wide base, distal portion recurved over base, without denticles; embolus heavy, arched, accompanied by hyaline conductor.

Female: Total length 8.1 mm; coloration and morphology as in male, except as noted. Legs light brown, proportionately much shorter, stouter than those of male. Chilum clearly divided. Leg spination: femora: II p0-1-1, r1-2-1; IV p1-1-1; tibiae IV r0-1-1; metatarsi: II p1-1-2, r1-1-2; III p1-2-2. Palpi robust, femora, tibiae, tarsi with dorsal spines, claw long, multidentate. Epigynum deeply excavated anteriorly (Fig. 12), septum oriented almost dorsoventrally (Fig. 13), spermathecae directed laterally (Fig. 14).

Other material examined: None.

Distribution: Known only from a cave in northern Mexico, but without notable troglobitic modifications.

### ***Tengella albolineata* (F. O. P.-CAMBRIDGE)**

*Metafecenia albolineata*; F. O. P.-Cambridge 1902: 357, pl. 33, figs. 16, 17 (male holotype from Amula, Guerrero, Mexico, in BMNH, examined only during brief visit to that collection).

*Tengella albolineata*; Lehtinen 1967: 437, f. 75 (male). – Wolff, 1978: 143, figs. 6, 7 (male).

The male palp, illustrated by the three cited authors, differs significantly from that of *T. radiata* and *T. thaleri*; there appears to be a sclerite (perhaps a terminal apophysis), associated with the embolus, that does not occur in the

males of the other two species. I have seen a female from Chiapas, Mexico (in CAS) that may belong to this species, as well as conspecific females (supposedly, if perhaps dubiously) from Bugaba, Chiriquí, Panama (in BMNH), that were misidentified as *Zorocrates fuscus* SIMON by F. O. P.-Cambridge. Their epigynal structure, unsurprisingly, is even less similar to that of *T. perfuga* and *T. radiata* than is that of *T. thaleri*. A more reliable association between the sexes is needed before the status of *T. albolineata* can be effectively resolved, but it is possible that *T. albolineata* is not actually congeneric with the other three species, in which case the generic name *Metafecenia* is available for it.

## Discussion

Examination of the type specimens of the type species of *Tengella* confirms the identity of the genus, and establishes that *T. radiata* (which has served as the basis for most modern work on the group) is a close relative of the type species. Similarities in male palpal morphology also support the placement of the new species, *T. thaleri*, in this genus. However, the association of the Mexican species *T. albolineata* may be erroneous, and the generic name *Metafecenia* may need to be revived for that species, when females can definitely be associated with its male holotype.

## Acknowledgments

The help of Quentin Wheeler, Janet Beccaloni, and Paul Hillyard (BMNH), Charles Griswold (CAS), Jonathan Coddington (USNM), and especially Jason Dunlop (ZMB) in accessing the uncommon specimens used here is enormously appreciated, as is the help of Mohammad Shadab and Steve Thurston (AMNH) with the illustrations and plates. Darrell Ubick (CAS) provided a most helpful review of the manuscript.

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