

## Acanthoscurria geniculata (C.L. Koch, 1841) - A Species with Challenges

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The genus *Acanthoscurria* was described in 1841 by C.L. Koch as *Mygale geniculata* in his 8th volume, "The Arachnids". Koch's last work, "Overview of the Arachnid System", appeared in 1850, where the species was listed as *Scurria geniculata*. The Austrian zoologist Anton Ausserer later established *Acanthoscurria* as a subgenus in 1871, forming the basis for the current genus. *A. geniculata* was established as the type species of the taxon. Interestingly, Ausserer states Rio Branco as the place of origin of *Acanthoscurria geniculata*, Brazil, although Koch, contrary to his usual practice, only specified Brazil and Ausserer supposedly had the same spiders. He refers to Johan Natterer, who traveled to Brazil with an Austrian expedition and collected a variety of animal specimens, such as birds, fish, but also insects and arachnids. From August 1831 to May 1832 he traveled to the area around the Rio Branco. The specimen Ausserer refers to also comes from this expedition. I suspect that Natterer or his colleagues assigned this spider to the wrong location, because the location is much further west than all previously known coordinates for this group of species. From his correspondence it can also be seen that he was not very particular about some of the preparations and that business interests were also at play. It is likely that *Acanthoscurria geniculata* specimens collected from various locations may have originated from a region further east. Simon mentioned the species in 1892 based on Paula's information, but it couldn't be confirmed, and there is no entry in the "World Spider Catalog." F.O. Pickard-Cambridge mentioned the species in 1896, and until 1957, when Bücherl published his work, "Sobre a Importância dos Bulbos Copuladores e das Apófises Tibiais dos Machos na Sistemática das Aranhas Caranguejeira," the spider was forgotten. Piza described a new *Acanthoscurria* species in 1972 named *Acanthoscurria transamazonica*, recognized as a synonym of *Acanthoscurria geniculata* in 2014 by Paula et al.

*Acanthoscurria geniculata*, now one of the most popular tarantulas in the pet trade, is characterized by its immense size and distinctive markings. The first specimens entered the pet trade around 1998 through Baumgarten. After 2001, additional specimens from Brazil, also imported by Baumgarten, were mistakenly labeled as *Acanthoscurria brocklehursti* F.O. Pickard-Cambridge, 1896. This misidentification was corrected in 2014 by Paula et al, recognizing *Acanthoscurria theraphosides* as a synonym for *Acanthoscurria brocklehursti*. It is undisputed today that the specimens imported by Baumgarten were not *A. theraphosides*. Successful breeding of this import line has occurred at least twice, including by Köhler in 2020. Descendants of these imported strains have entered the market. Some keepers continued to refer to the spiders as *A. brocklehursti*, preserving the line. Others labeled the spiders as *A. geniculata*, causing them to fade into obscurity in the tarantula community.

I received alcohol-preserved material and exuviae from this import several years ago, which I also examined. Comparing two visually distinct lines led me to conclude that they represent a variation of the previously known *A. geniculata* in the pet trade. The color differences, albeit sparse morphological variations, seemed to be local variations. Subsequently, I came across a Facebook post by the research team of Volker von Wirth, which reached a similar conclusion. However, I must note that, until that point, I hadn't encountered live specimens and knew little about the history of these spiders. Intrigued, I acquired some specimens and researched their care and breeding experiences. Previously, I observed that some males from the import line didn't successfully mate with my established female *A. geniculata*. Now, it became evident that these males were indeed from the mentioned import line. The fact that this lineage couldn't interbreed with the known *A. geniculata*,

coupled with observable color and size differences, prompted me to conduct further studies on these spiders.

Additional differences emerged during these studies. For example, the number of larvae in the cocoon was approximately 1000-1200, whereas known *A. geniculata* typically produced larval numbers well over 2000 under similar conditions. Despite identical feeding, the growth of these examined spiders lagged significantly behind that of known *A. geniculata* juveniles of the same age. *A. geniculata* can reach maturity in three years under favorable conditions, while the examined spiders required more than double that time. The females also seem to live significantly longer, surpassing 20 years, compared to the known *A. geniculata* females. Morphologically, finding distinct characteristics proved challenging. In initial examinations, I noticed that the bulbus lacked an apical keel (Fig. 1). I found this same missing feature on Facebook in von Wirth's findings. Without the other previously mentioned peculiarities, I might have dismissed this as a variation.

Further investigation into the available, now extensive literature showed that animals with color variations were not entirely unknown. Koch, for instance, published, at a time when tarantulas didn't emphasize genital structures, the drawing of the holotype's markings in his initial description of *Mygale geniculata* (Fig. 1). I assumed that, lacking other features, these color variations were meticulously represented. Surprisingly, this drawing matched the questionable specimens we had.

Additional research revealed that *Acanthoscurria transamazonica* PIZA, 1972, later synonymized with *A. geniculata* by Paula, was also such a spider, depicted in a poor but recognizable photo (Fig. 2). In Paula's 2014 revision, a pair of *A. geniculata* was illustrated, with the male corresponding to the import line labeled as *A. brocklehursti* by Baumgarten, but the female belonged to the previously known form (these illustrations are not reproduced here due to copyright restrictions as the publication is still relatively recent). The origin locations were provided below the photo, approximately 750 km apart. The male came from the coastal area, while the female originated from the inland region. Both locations matched Baumgarten's information.

A Facebook comment by Baumgarten contained the following information about the origin of both forms and is quoted verbatim (with the author's permission): "However, the distribution of the so-called *brocklehursti* is different or more to the east than the *geniculata*, which is almost only found around the Santarem region in Para, in a relatively dry rainforest region for Amazon...., while the *brocklehursti* occurs in a large part of the same state in the eastern region..... almost always in termite mounds or very humid rainforests.... and that also in the state of Amapa and Ilha Marajo.

These details also coincide with the origin of Piza's specimen and the specimens depicted in Paula's revision.

Dr. Jason Dunlop sent me photos of the holotype, which is located in the collection of the Zoological Museum Berlin, confirming my suspicions.

I currently hold the opinion that both forms represent two valid species. There are plenty of examples in zoology where morphologically negligible differences exist, yet they unquestionably belong to two taxa. In entomology, we have numerous instances where you can only find the tiniest features like bristles and hairs, or as seen in some beetles, where females are indistinguishable in certain species. We are familiar with the issue from *Theraphosa stirmi*, which only garnered attention

after unsuccessful mating attempts with *Theraphosa blondi* (LATREILLE, 1804). In this case, the morphological characteristics distinguishing the two species are also quite sparse.

In summary, it implies that the specimens previously assumed to be *A. geniculata* belong to an undescribed species, and the spiders originally referred to as '*A. brocklehursti*' are *Acanthoscurria geniculata*.

In conclusion, I would like to reiterate the distinguishing features in tabular form:

Feature	<i>Acanthoscurria geniculata</i>	<i>Acanthoscurria spec.</i>
<b>Bulbus (male)</b>	Apical keel present (Fig. 4)	Apical keel significantly reduced or absent (Fig. 4)
<b>Female Genital Structures</b>	Laterally bulging spermatheca toward the base, receptacula small, never surpassing the lateral edge (Fig. 5)	Laterally not or only slightly widened at the base, larger receptacula surpassing the lateral edge (Fig. 5)
<b>Female Coloring</b>	White area on dorsal leg segments of patellae and tibiae only as a narrow stripe, on metatarsi, like in <i>A. spec.</i> , only indistinct	All legs on patellae, tibiae, and metatarsus with dorsal white hair patch at the end of the segment, with the extension reaching up to 1/3 on patellae
<b>Male Coloring</b>	Narrow white hair patch at the end of the segments, longitudinal stripes on patellae dark and barely visible	Wide and conspicuous white hair patch at the end of the segments, longitudinal stripes on patellae white and distinct

Acknowledgments: I would like to express my gratitude to Matthias Köhler for providing material and information, to Mark Baumgarten for details regarding the origin of the specimens, and to Dr. Jason Dunlop for promptly examining the holotype of *Acanthoscurria geniculata*.

Literature:

BERTANI, R. (2001). Revision, cladistic analysis, and zoogeography of *Vitalius*, *Nhandu*, and *Proshapalopus*; with notes on other theraphosine genera (Araneae, Theraphosidae). *Arquivos de Zoologia* 36(3): 265-356

BÜCHERL, W. (1957). Sobre a importância dos bulbos copuladores e das apófises tibiais dos machos na sistemática das aranhas caranguejeiras (Orthognatha). *Anais da Academia Brasileira de Ciências* 29: 377-416

GARCILLO E DE F., BRESOVIT, A. D. & LUCAS, S. M. (2018). *Umbyquyra* gen. nov., the Neotropical region (Araneae, Mygalomorphae, Theraphosidae).