

## When leaving home becomes a matter of millions of years: Hooded Tickspiders and their distribution.

By Rodrigo Monjaraz-Ruedas, published originally online in Spanish language in December, 2017 as part of a blog series dedicated to explaining scientific articles to the general public. Blog name: "Arac'nota". Outreach Activities of the "Aracnidos" group (<https://aracnidosmex.wixsite.com/aracnidos>).

Original Spanish post:

<https://aracnidosmex.wixsite.com/aracnidos/single-post/2017/12/18/cuando-abandonar-tu-hogar-te-cuesta-miles-de-a%C3%B1os-los-ricin%C3%BAlidos-y-su-actual-distribuci%C3%B3n>

### English translation:

The order Ricinulei is one of the smallest and most forgotten among the arachnids, but for that reason it is still an extremely interesting group, their small size makes them very peculiar animals, they are mainly associated with caves and tropical climates, however it is a real challenge to find and collect them, even for those who claim themselves as the best collectors, it is a real headache. The most outstanding characteristic of the hooded tickspiders is as the name suggest, that they wear a "cap" on their heads, better known as "cuculus" and that no other arachnid order possess. Its body size is small, approximately 4mm, and it has brown to reddish colorations (Fig. 1), which gives them an extra layer of camouflage, which further complicates its collection.

But what makes these critters more extraordinary is their current distribution. Three genera are currently known: *Ricinoides* in Africa, *Cryptocellus* in South America, and *Pseudocellus* in the Caribbean, Central America, and Mexico. This wide distribution made us think that given the fact that they are extremely small and do not move great distances, how is it that they inhabit almost the entire world? Well, the answer is already hidden in their genes, and as Fernandez and Giribet, 2015 demonstrated, hooded tickspiders have remained anchored to their area of distribution for many years, changing and evolving together with their homeland, that is, when the place in where they live changes, so do they with it, in fact they never leave their homes.

In this way approximately 200 million years ago, the hooded tickspiders were all living together in what we know as the super continent Gondwana (Fig. 2), however when the continents continuing drifting, different groups of hooded tickspiders where divided from each other, some stayed in Africa, which is what we know as *Ricinoides*, while the rest sailed along with their landmass, differentiating themselves from their African brothers, however, some of them remained in South America, which is what we know as *Cryptocellus* and the rest migrated to the North becoming *Pseudocellus*, the current Mexican hooded tickspiders, in this way, the Mexican species remained in contact with their South American cousins for longer periods of time than with their African cousins, whom they stopped seeing approximately 105 million years ago.

This is an example of how those small arachnids, which can move little and are closely associated with their area of distribution (micro endemics), help us to analyze and understand how the earth has changed over the course of time.

If you are interested in learning more about biogeography or reading the complete article, do not hesitate to consult the original publication.

### Reference:

Fernández R. y G. Giribet. 2015. Unnoticed in the tropics: phylogenomic resolution of the poorly known arachnid order Ricinulei (Arachnida). *Royal Society Open Science*, 2: 150065. <http://dx.doi.org/10.1098/rsos.150065>