

This is another installment in an occasional series to help those doing cave monitoring, or who are just interested in knowing what they are looking at. As always for invertebrates, a small hand lens will assist greatly when you are looking at these critters.

Last time we looked at some of the spiders inhabiting our caves; this time let's take a look at the spiders' arachnid cousins – the harvestmen, mites, ticks and pseudoscorpions. As for all arachnids, these have in common a one- or two-part body (no clear division of the head and thorax) and eight legs – except not always! A lot of the mites you see will be juveniles, and in most species these have only six legs – but you will need a decent hand lens and a steady hand to be able to count the legs on such a small speck.



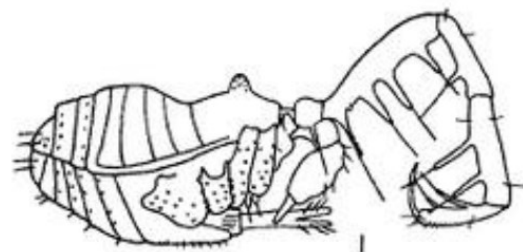
Leiobunum flavescens

Harvestmen, also known as opilionids or more colloquially daddy long-legs are familiar sights and fairly easy to identify, at least as an order. As noted last time, they are easily distinguished from spiders by their one-part body – it's just a single spherical blob, not clearly divided into the two parts seen in all spiders. What you'll notice first though are the ridiculously long legs, seemingly way out of proportion to the small orange colored body.

Species of *Leiobunum* often hang out in entrance areas, usually on the ceiling. In Missouri they are usually seen in small numbers but in warmer climes, Texas for example, they can completely cover a ceiling with an oscillating mass of legs and bodies. This has been known to freak some people out, especially if the ceiling is low! But harvestmen are of course, harmless, though you probably still wouldn't want one to get down your coveralls.



A close up of the *Leiobunum* body shows the tiny eyes perched in a black tubercle on top.



Generalized cave adapted harvestman – note the very long mouthparts (palpi). Legs omitted for clarity. for clarity.

While harvestmen are by and large predators of small invertebrates, unlike other arachnids some species also get food from scavenging or even from vegetable matter such as lichen or rotting fungi. One species reported from St. Louis County caves is known to prey on earthworms, but the exact dietary requirements of different species is not at all well known.

You won't find these typical harvestmen much beyond the entrance, but we also have at least three cave adapted species, much less frequently seen. Taney County seems to be a hot-bed for these creatures; two of them, *Crosbeyella spinturnix* and *Erebomaster* sp. have been reported mainly from that county. *Crosbeyella* also extends into Arkansas. The third species, *Sabocon cavicolens*, has turned up only in caves of the Lower Ozarks – Shannon and Oregon Counties. Although the legs on these species are much shorter than those of the *Leiobunum* daddy long-legs, they are longer and more slender than those of their nearest surface relatives. The bodies look similar except that the jaws are much more prominent, the color is generally paler, and the eye spots may be unpigmented or rudimentary.

Pseudoscorpions are another group of arachnids you may come across, but only if you are looking closely! These creatures with their prominent pinchers resemble tiny tail-less scorpions. Like most arachnids, they are venomous, carrying venom-injecting teeth at the tips of those pinchers. Unlike the harvestmen, the cephalothorax (head plus thorax) and the abdomen are clearly distinguished. The commonest species by far is *Hesperochernes occidentalis*, a relatively robust species. You will find them in areas with high levels of organic material which attracts the small invertebrates such as springtails and mites that the pseudoscorpion preys upon, often hiding under rocks. They are fairly common in fresh bat guano piles, where prey is abundant.

We also have several less common species from a different family (*Chthoniidae*) showing a higher degree of cave adaptation – a somewhat more slender body, paler color and relatively longer appendages, especially the pinchers. *Apochthonius* sp. are widespread, while *Mundochthonius* are known only from only two Missouri caves, one in Lincoln County, the other in Oregon County. The Oregon County cave is the only known site for the species, and despite several follow up visits, has only been seen once.



***Hesperochernes* left, cave adapted *Chthoniid* right.**

Finally, there are the mites, and here we have a real identification problem. Mites are very diverse and tough to identify, and available taxonomists working with this group are thinly scattered. Mites are commonest in bat guano piles, where they can reach astronomical numbers. These guano mites are tiny, generally globular, slow moving and colored deep brown. Species at all levels of the food chain exist – guano eaters, fungi eaters and predators. One group is fairly easy to identify, though not to species level – these are the oribatids, or beetle mites, so called because they resemble tiny, shiny black beetles, though they are much smaller than any cave beetle you will come across. Another mite you can be pretty



***Robustocheles* - actual size about 1.5mm**

confident of is very unlike the slow-moving mites of the guano habitat – you will see these tiny white creatures running around rapidly and ceaselessly on floors where there is a fair amount of organic debris. They are often mistaken for tiny cave spiders. Cave biologist Tom Poulson's name for these is crazy-legs mites, and the name fits. More formally, our common species is *Robustocheles hilli*, but there may well be a hidden diversity, which will need some serious taxonomic work to sort out. So, if you are looking for a lifetime of work in cave arachnid systematics, there is no shortage of work to be done with the mites (though maybe a shortage of funding!) --Mick Sutton