

The content below comes from two articles written by cave biologist Mick Sutton of the Cave Research Foundation. These articles were originally published in the MSS newsletter Liaison.

This is another in an occasional series to help those doing cave monitoring, or who are just interested in knowing who they are looking at underground.

Looking back on this series I was surprised to see that I had not yet tackled the beetles – one of my favorite groups of animals since childhood. Beetles are amazingly diverse – the most species-rich of all the insect orders. Fortunately for the Ozark cave biologist, the number of species that regularly show up in Ozark caves is very much smaller.

The commonest cave adapted beetle in the Ozarks is a little fungus beetle called *Ptomaphagus cavernicola*. You can find these, sometimes in large numbers, in areas of concentrated food supplies, such as guano piles. Together with the cave dung fly *Spelobia tenebrarum*, they are the first to show up at a fresh corpse or dung deposit. They are rather tiny - 4 mm (1/8 inch) - oval shaped and brown, often with a grayish cast to the wing covers (elytrae). As the common name suggests, the adults are fungus feeders. The larvae, though, are predators on small invertebrates, especially on the maggots of *Spelobia*. The larvae are fairly easy to spot – they are about the same size as the adult and have a body that's tapered front to rear. Although found almost exclusively in caves, there is a question as to whether *Ptomaphagus* is a true troglobite. It has functional eyes and is widely distributed and common with little variability across its range, strongly suggesting the ability to disperse overland. It has been collected at least once from an area lacking in karst.



### ***Ptomaphagus cavernicola***

Cave adapted beetles that are unquestionably troglotic are common throughout eastern North America east of the Mississippi. These are members of the trechine family of predatory ground beetles (Carabidae). They are small, brown, and all look rather similar. Those of you who have caved at Mammoth Cave will probably be familiar with *Neaphaenops tellkampfi* the well-known predator on cricket eggs (sorry, no common names in this group!). West of the Mississippi, two species of *Xenotrechus* were known from two sites in Ste. Genevieve and Jefferson Counties, but these beetles have not been recorded since 1978, and their current status is unknown. The most widespread genus is *Pseudanophthalmus* (sued-an-off-thal-muss) with more than 100 species, many of them known from only one cave, and only distinguishable from each other by highly technical features. This genus was believed absent west of the Mississippi, but that changed in 2005 when Sue Hagan spotted a beetle in Branson Cave that looked like it belonged in Mammoth Cave rather than Shannon County, Missouri. Sure enough, this turned out to be the first record of a *Pseudanophthalmus* beetle west of the Mississippi. The genus subsequently turned up in three additional caves in Shannon and Texas Counties. With single site endemism common, we don't know whether we have one new species or as many as four. In three of the caves, the beetle is very sparse – Branson Cave was looked over by biologists many times without noticing it; the Island Branch record depends on just one observation. Only the Texas County site has a sizeable population. The first batch of specimens went to the then leading expert in the genus, Thomas Barr. Unfortunately, Tom died before he could finish describing and naming the beetle, and the specimens were lost. The Texas county beetle is currently in the hands of another taxonomist awaiting a full description – these things take a lot of time!

Although this is not an animal you will come across often, it's worth keeping a look out for to see if its range is larger than we currently know. It's a small (5 mm or 3/16 inch), light brown beetle of slender build and has been seen associated with woody debris or just wandering around on mud banks. With a hand lens, you might be able to determine that it's lacking eyes.



***Pseudanophthalmus* new sp. Photo by Matt Niemiller**



***Platynus tenuicollis* Photo by Dan Lamping**

Now for a few beetles you're likely to encounter much more often than the little trechine. As with all taxa, pretty much anything could show up as an accidental or casual visitor, but there are several semi cave-adapted troglophiles. Probably the commonest and most conspicuous is another ground beetle, *Platynus tenuicollis*. It's a large, black beetle, about 12 mm (1/2 inch) long with a glossy jet-black body and tan legs and antennae. They are frequently seen wandering around on the mud banks of streams but can show up more or less anywhere. Beware though, there is a less common look-alike troglophile – another carabid ground beetle called *Agonum extensicollis* that differs somewhat in the shape of its head and thorax. Best to just note any of these as an unidentified ground beetle.

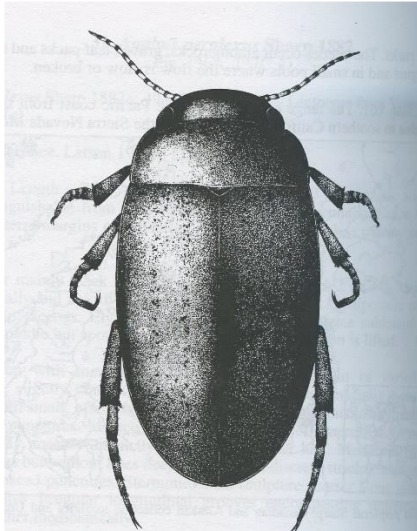
Another common troglophile is the rove beetle *Quedius erythrogaster*. Rove beetles are a very distinctive family (Staphylinidae), easily told by their long, thin abdomens which are not completely covered by the elytrae (wing cases). *Quedius* is a relatively large rove beetle, about the same length (12 mm, 1/2 inch) as *Platynus*. The head and thorax are black, while the wing covers are a rich chestnut and the abdomen is dark reddish-brown. You will most often see them in areas of dense organic material, especially bat guano piles, where they hunt small invertebrate prey. Also common are much smaller, all black rove beetles of the subfamily Aleocharinae. These will also be found most often in and around dung and guano deposits. There are at least two species, *Atheta troglophila* probably being the commonest, but Aleocharinae are extremely difficult to identify and the taxonomy is a bit of a mess.



***Quedius erythrogaster* Photo by Matt Bumgardner**

Cave streams can be home to a variety of aquatic beetles. Generally, they occur in small numbers in near-entrance situations but in a few caves predatory diving beetles (Dytiscidae) have high population densities and extend well

into the dark zone. The largest of these at about 13 mm (1/2 inch) is an apparently undescribed species of *Ilybiosoma*. As for many other insects, this *Agabus/Ilybiosoma* complex is species rich and in need of some taxonomic revision. The beetles have shiny black convex oval bodies. The legs are adapted for swimming, with broad leg segments and long dense “hairs” (setae) forming effective paddles. Less often encountered are beetles of the family Hydrophilidae (water scavenger beetles), which look superficially



similar but have vegetarian rather than carnivorous habits. There are smaller aquatic beetles that also turn up occasionally such as Elmidae (riffle beetles), which you’ll see crawling along the bottom but never swimming, or Haliplidae (crawling water beetles) which are small, oval, and despite the common name do swim as well as crawl.

Keep an eye out for the odd casual visitor as well – for example, fireflies have been known to occur well into the dark zone, and as with other invertebrates, pretty much anything from the surrounding landscape can turn up as casual or accidental visitors. (Photo credits: Pseudanophthalmus – Matt Niemiller; Platynus tenuicollis – Dan Lamping; Quedius erythrogaster – Matt Bumgardner) – Mick Sutton

***Ilybiosoma* sp. Illustration from  
Predaceous diving beetles of the  
Nearctic region, Larson et al. 2000.**