

converged, Sara contorted her flight in an attempt to snag the bat out of mid-air. The bat, however, easily dodged the attempted talon grab and continued on its way. Mark has only one video that shows an actual prey capture. In this video, Charles is observed swooping to the ground and grabbing a vole. In the last second of this video, the vole is clearly seen dangling from the owl's bill.

The audience was clearly enthralled with the evening's presentation. Part of the reason for this was Mark's ability to anthropomorphize the animal's behaviors. In one video, Sara is seen dropping a rabbit that she was feeding to her young. Mark attributed her facial expression to one of dismay for having done something so stupid. When an owl missed, prey was often described as having a near death experience. This style of presentation is a great tool to help the audience better understand the lives of the animals being talked about. The hard part is to make the story exciting, yet also ensure that real scientific information is being conveyed, and , and at this Mark succeeds very well. Those wishing to follow the Forest Park owls can visit Mark's blog at <http://forestparkowls.blogspot.com> or follow him on Twitter at <https://twitter.com/forestparkowls>. Anyone interested in seeing and hearing owls in person should contact Mark through one of these venues to request permission to join him on one of his regular owl-prowls.



## Not Quite Adult

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*Ted C. MacRae*<sup>1</sup>

For the past few years I've had research plots in northwestern Tennessee. Each summer, once a month or so, I make the 5-hour drive to the site and spend the afternoon taking data. Any normal person would then check in to their hotel room in town, watch television, and make the drive back to St. Louis the next morning. Of course—I'm not normal, I'm an entomologist! The southeastern lowlands of Missouri, where over the years I've found (and continue to find) a number of good

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<sup>1</sup> Originally posted 9 September 2014 at the author's website: <http://beetlesinthebush.wordpress.com>. Photo by the author.



Subadult female mayfly (prob. *Maccaffertium* sp.),  
Mississippi Co., Missouri.

spots for collecting insects, are tantalizing close. Instead of retiring immediately to my hotel room, I'd rather head back to the lowlands and find a good spot for setting up a blacklight. It might be midnight before I finally get to a hotel room, but it's all worth it. Some of the most interesting insects that I've featured here during the past few years have come to blacklights on one of these trips, including the primitive longhorned beetles *Parandra glabra* and *Mallodon dasystemus* and adult male bagworms, *Thyridopteryx ephemeraeformis*.

Most of the spots I've found are located along the Mississippi River, a downside of which is the overwhelming abundance of aquatic insects that are often attracted to the lights. Caddisflies (order Trichoptera) are the worst, sometimes swarming the lights with such frenetic abundance that to check the sheets one must button the collar, hold the breath, dash in quickly to look at the sheet, and retreat just as quickly lest the fluttering hordes find their way up the nostrils, down the ear canals, and into the eyes. Mayflies (order Ephemeroptera) also can be attracted in great numbers, although they tend to be, fortunately, much calmer and better behaved on the sheet than their trichopteran counterparts. Normally, I pay little attention to these insects other than what is required to avoid breathing them—their abundance almost makes them unnoticeable. On one particular night in early August, however, my eyes caught the soft glow of a ghostly-white insect sitting on the underside of a leaf some yards away from the light. I looked closer to see it was a mayfly, and so pale was its coloration that I knew it would make for a striking photograph against the black night sky.

The reason for its milky-white coloration is due to a unique aspect of mayfly developmental biology—they are the only insects to develop fully functional wings before their final molt to adulthood. This stage, called the sub-adult or subimago, emerges from the water where it spent the past year as a nymph (also called a naiad) and flies to nearby vegetation, but it is still not mature. One additional molt is required; wings and all, before the insect finally reaches adulthood and can spend the few remaining hours of its life in single-minded pursuit of a mate. Sub-adult mayflies are distinguished from their adult counterparts by their paler coloration and opaque rather than clear wings. We can also tell that this individual is a female because no claspers are visible at the tip of the abdomen (which males possess for mating) and its relatively small eyes (the eyes of males almost completely cover their head).

My thanks to [Dr. Robert Sites](#), who initially suggested this might be a species in the family Heptageniidae, and to [Roger Rohrbeck](#) for confirming my subsequent identification as probably belonging to the genus [Maccaffertium](#).



## Missouri's Largest Planthopper

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*Ted C. MacRae*<sup>1</sup>

Although I have long dedicated myself to beetles, I must confess that my first love was the so-called “Homoptera”—that now defunct order<sup>2</sup> containing some really cool bugs (cicadas and hoppers—i.e., leafhoppers, treehoppers, planthoppers, froghoppers, armadillohoppers<sup>3</sup>, etc.) and some not-so-cool bugs (aphids, whiteflies, mealybugs, and their kin) that turn out to be not-so-closely-related to the cicadas and

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<sup>1</sup> Originally posted 13 November 2014 at the author's website: <http://beetlesinthebush.wordpress.com>. Photos by the author.

<sup>2</sup> The homopterans have since been subsumed within the larger order Hemiptera (true bugs)—an irritating but necessary consequence of molecular studies that have shown rather conclusively that hoppers and cicadas are more closely related to the other true bugs than they are to the group containing aphids, whiteflies and mealybugs.

<sup>3</sup> Okay, this is not a real thing!

hoppers as some of the other “true” bugs. Perhaps you already sense that it was only the cicadas and hoppers that I really liked to begin with, the other mentioned groups being... well... boring from my perspective as a collector (overwhelming numbers of tiny, soft-bodied, sessile insects that required preservation in alcohol or on slides<sup>4</sup>). Even within the “cool” homopterans, however, some groups interested me more than others. Leafhoppers were okay, but my interest in them derived mostly from the fact that they were the subject of my thesis work. Treehoppers, on the other hand, were my favorite because they were just so adorably bizarre, and cicadas also fascinated me due to their size and behavioral charisma.

The planthoppers also interested me, although many of the various families contained within the group seemed not much different to me than leafhoppers. One family, however, stood out—the Fulgoridae. Much larger than the other planthoppers, they seemed like a cross between a planthopper and a small cicada (okay, a very small cicada)—combining the hopping capabilities of the former with the size (almost) of the latter. I only rarely encountered these bugs in Missouri; actually it was only a single species that I ever found—*Poblicia fuliginosa*, one of only two species in the family known to occur as far north as Missouri (Bartlett 2014). Moreover, when I did find them, they were extraordinarily wary and difficult to approach and collect. Vernon Brou, in a comment at this species' [BugGuide page](#), describes their capture-avoidance capabilities perfectly:

*These are nearly impossible to capture by hand netting, they are rocket propelled. A most [frustrating] exercise in futility.—Vernon Antoine Brou, Jr., pers. comm. to Mike Quinn, 2012.*

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This past fall, while on a collecting trip in the White River Hills of extreme southwestern Missouri, I chanced upon a few individuals perching on the stems of prairie dock (*Silphium terebinthinaceum*) in a dolomite glade. Remembering how wary they were in my previous encounters, I figured I had little chance of successfully

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<sup>4</sup> So, not only are they boring to curate, but they directly caused the first order of insects in which I became interested to be completely dismantled!