

## Beetle Bits: Hunting the Elusive "Hibiscus Jewel Beetle"

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To many people, entomologists are an odd lot. Mention the term "insect collector" and they immediately call to mind the familiar caricature of an eccentric, bespectacled, professorial type gaily flitting through a meadow in single-minded pursuit of a rare beauty – butterfly net in one hand and jar of ether in the other. As an avid collector myself, I'm a little uncomfortable with this stereotype – not because of the rather nerdy image portrayed, but because it makes insect collectors seem so... 'philatelic.' In essence, we are but dork versions of big game hunters – obsessed with acquiring "trophies" for our collections, yet lacking the physical and mental fortitude possessed by those able to confront large, angry mammals. Of course, there are more than a few insect collectors who do so purely for the joy of building a collection. For myself, however, as well as most other collectors with whom I've become acquainted, it's not really the specimens themselves that make a collection valuable, but rather the scientific information that those specimens represent. Advancing our knowledge of insects by documenting their occurrence, host plants, variation, etc., is the real excitement, even if the specimens themselves aren't all that showy. Of course, learning something new about a species that is also striking in appearance is even more exciting.

While the beetle groups that I study (long-horned and jewel beetles) are generally regarded as showy, the truth is that vastly more species in these groups are not eye-catching at all. This is particularly true of a very large genus of jewel beetles called *Agrilus*. With nearly 3,000 species described thus far (and perhaps at least that many awaiting description), this may well be the largest genus in the entire animal kingdom. Most species of *Agrilus* are small and fairly uniform in appearance, making them difficult to distinguish from one another without careful study. As a result, the members of this genus have not received the same attention given to other members of the family, and much remains to be learned about their distributions, host plants, and habits. Indeed, new species continue to be discovered right here in

Missouri (see my article in the April 2004 issue of *Nature Notes*).

For many years, one of the rarest and least known species in the genus was *Agrilus concinnus*. Although it was originally discovered in Florida back in 1891, precious few additional specimens were collected over the next 100 years. By the time I began my studies in the 1980s, Georgia and Texas were the only additional states from which the species had been found. Nothing at all was known about its biology or host plants. Unlike most other species in the genus, however, *A. concinnus* is a relatively large and quite handsome species – its coppery red pronotum (neck) with two iridescent, golden stripes running down jet black elytra (wing covers) certainly make it worthy of the name 'jewel beetle'. I first encountered this species in 1987 at Otter Slough Conservation Area in the Missouri bootheel. This area contains some of the state's best remnants of wet bottomland forest and natural sloughs and had become one of my favorite haunts for beetle collecting. On this particular occasion, I found a mating pair sitting on low lying vegetation as I walked along an old 2-track next to one of the sloughs. Of course, their beauty generated much excitement when I found them, and I became even more excited when I later realized their rarity and that they represented a new record for Missouri. Unfortunately, the specimens offered little clue as to the identity of their host plant – or so I thought.

I returned to this location many times over the next several years. However, I never encountered *A. concinnus* again until a few years ago, when I saw a specimen sitting on the leaf of *Hibiscus lasiocarpus*. It immediately took flight when I saw it, and without thinking I began running through the thick growth after it. I kept it in my sights as it flew – all the while managing to avoid the stinging nettles, knee-deep water, and cottonmouths that are abundant here. At last, it landed on another *Hibiscus* plant, and I instantly froze – gaze fixed on the beetle. I cautiously approached to within net handle reach, and with a forceful, assertive swing netted the beetle. That was the only specimen I saw that day, but the real success was that I finally had a clue about its host plant – *Hibiscus*.

After I found the first Missouri specimens of *A. concinnus*, I visited the University of Kansas insect collection, in which I found four unidentified specimens of *A. concinnus* from a spot in southeastern Kansas. Also, during that time, a colleague (Dr. Gayle Nelson) had reported a specimen from Illinois in the collection at the Illinois Natural History Survey. These findings suggested that the beetle was more broadly distributed than previously thought and gave further support to the idea that this beetle was somehow associated with the genus *Hibiscus* (the Illinois specimen bore a label stating that it had been collected on *Hibiscus moscheutos*). My multiple captures of this beetle at Otter Slough piqued the interest of Gayle, for although he is perhaps the country's leading jewel beetle expert, the above museum specimens were the only ones that he had ever encountered. I told him of my suspicions regarding the beetle's association with *Hibiscus*, that all my specimens had been collected in late June or early July, and gave him specific locality data for the specimens I had collected or seen.

Last June, Gayle (who lives near Kansas City) went to the southeastern Kansas location and found a good stand of another species of *Hibiscus* (*H. laevis*), but no beetles. Smart man that he is, though, he dug up one of the plants, brought it back and placed it in a rearing container. About a month later, he called to tell me that a single adult *A. concinnus* had emerged from the plant, after which he had gone back to the Kansas location and, this time, observed a fair number of beetles on the *Hibiscus* plants. There is now no question that the beetle utilizes *Hibiscus* for larval development, but what was surprising was that it was now late July. With the exception of a few species that mine the leaves of sedges, jewel beetles in most parts of the country are active only during spring or early summer. I had never gone to Otter Slough during late July, so the following weekend, Rich Thoma and I blasted down to the bootheel to see if, indeed, it occurred in southeastern Missouri this late in the season. We stopped at several spots where we saw *Hibiscus* plants growing, but alas, no beetles were observed. I was beginning to question the 'late season' hypothesis. Finally, we arrived at Otter Slough and started looking around. Within

minutes, Rich called over to me and says, "Hey, what does your beetle look like?" I describe it to him, and he says, "Well, you might want to look at this." He brings it over, and it is *A. concinnus*! A few minutes later I see one, and during the next hour or so we observed more than a dozen specimens. The beetles were nearly always observed sitting on the upper surface of the leaves – never hiding on the stems or lower leaf surfaces, and several mating pairs were found. Two weeks later I traveled to Kansas City to meet up with Gayle, and together we traveled to the Kansas spot. As it was now early August, I didn't know if we would still see the beetle, but my question was quickly answered as soon as we arrived. Within minutes I saw a beetle sitting on a *Hibiscus* leaf, and during the next couple of hours we observed dozens of specimens. They were far more abundant than Gayle had observed earlier in July. It was now apparent to us that the few specimens I had encountered in previous years were taken at the very beginning of the adult emergence period, and that peak adult emergence for this beetle actually occurs much later in the season.

Thus, *Agrilus concinnus* is no longer one of North America's rarest and least known beetles. In fact, it was never rare to begin with – we just didn't know how to encounter it. I suspect that the beetle can be found on *Hibiscus* in natural wetlands throughout the eastern United States. Preserving these habitats should go a long way towards ensuring the long term survival of this exquisitely beautiful insect. 22

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