

BEETLE BITS: THE "BEAUTIFUL" TIGER BEETLE

By Ted C. MacRae

For most of the quarter-century that I've been studying insects, two groups of beetles – jewel beetles (family Buprestidae) and longhorned beetles (family Cerambycidae), woodboring beetles collectively – have been my primary focus. Despite the popularity of both groups with collectors, there is still much we don't know about them – basic things like where they occur, what plants they feed upon, or even how many species are out there. Dozens of new species continue to be discovered every year from across the globe. Most of them live in the tropics, where habitat loss caused by ever-increasing human pressure outpaces our ability as biologists to describe its flora and fauna. But even in relatively well-studied North America, new species are being discovered on a regular basis, including from our own backyard (see my article in the April 2004 issue of *Nature Notes*: "A new beetle for Missouri – With a Twist!"). My own studies have increasingly focused on understanding beetle host plant associations, and as a result most of my field efforts involve retrieving infested wood from native habitats and rearing the larvae to adulthood in my "laboratory" (i.e., garage). This has proven to be a highly effective, albeit laborious, collecting method that has generated literally hundreds of new host plant records and greatly improved our knowledge about the geographic distributions of these beetles.

In recent years, however, I've also grown quite fond of tiger beetles (family Cicindelidae). Another group of beetles popular among collectors (come to think of it, there aren't that many beetle groups that are not popular), they present quite a different study challenge compared to woodboring beetles. Voracious predators of smaller insects both as larvae and as adults, tiger beetle species are often restricted to specific natural communities such as sand bars, erosion cuts, muddy banks, forest litter, glades, prairies, and saline flats. Many species are fast runners and strong fliers, while others are quite adept at hiding in cracks and crevices or among vegetation. Most occur as adults only for a limited time during the season, and even in season may not be active if conditions of temperature, sun, and wind are not optimal. My interest in this group began as a result of writing a general interest article on some of the species found in Missouri for the *Missouri Conservationist* (June 2001 issue). These efforts have since expanded to a more formal, systematic study of all species occurring within the state (currently in progress in collaboration with fellow WGNSS-member and Monsanto colleague Christopher Brown). I must admit, however, a certain amount of enjoyment in collecting these beetles for the pure pleasure of it – the challenge of traveling to distant localities during a precise time-of-year and searching for specific habitats in hopes of seeing them in their native haunts. Success is never assured, but when it does occur, far greater understanding of the beetle and its natural history is achieved compared to just looking at pinned, preserved specimens neatly lined up in a drawer in some collection. There is also an element of 'instant gratification' in finding these beetles that is missing from collecting infested wood for rearing, where success may not be realized for another year or two while waiting for adults to emerge. Many interesting tiger beetles become active in the fall, a time when crisp smells, hints of color, and long midday shadows make for glorious time in the field. The "fall tiger beetle trip" is now an annual ritual, almost a diversionary farewell to a long, hot summer.

One highly desirable tiger beetle is *Cicindela pulchra*. This beetle has no common name, but its scientific name translates literally to "beautiful tiger beetle." And what a beauty it

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is! One of the largest species in the genus, its robust, cylindrical body is colored a striking iridescent red, with the elytra (wing covers), pronotum (neck) and head margined with a dark metallic blue, purple or green (for those with access to the internet, a beautiful photograph of the adult can be seen at http://entomology.unl.edu/nebraska_tigers/Cpulcra_home.htm). For years after receiving a specimen of this splendid species in trade I have wanted to see it in the wild, and last year I began efforts in earnest to do so. It occurs fairly commonly during spring and fall across Arizona, New Mexico, Colorado, and western Texas; however, an outpost population is known from the scenic Gypsum Hills of south-central Kansas. Published information indicates that adults occur in grasslands on eroded hillsides, where they utilize clumps of vegetation for cover. Ron Huber – the nation’s foremost tiger beetle expert – had suggested to me that I might be able to find the beetle at a Scenic Overlook on Highway 160 located 9 miles west of Medicine Lodge in Barber County, Kansas. Armed with this information, Chris Brown and I traveled to Barber County in September 2004. We had no trouble finding the Scenic Overlook, but an intensive search of the area revealed no beetles. There was additional habitat surrounding the Overlook that appeared promising, but these areas were fenced off. We did some quick searches near the fence borders, but without landowner permission, extensive searching much beyond the fences was out of the question. We drove further along the highway and explored some side roads and saw lots and lots of potential habitat – all fenced! It became clear that our searches would have to be confined to banks and cuts along roadsides. We spent the next two days in and around the area and collected a number of other tiger beetle species, but not a single *Cicindela pulchra* was seen. Not knowing if we were too early (we were on the early side of their known occurrence), or if it was too dry (the area seemed very dry), or if we simply had not located exactly the right habitat (tiger beetle distributions can be very patchy), we resolved to try again the following year.

This year, I planned another trip to Barber County in early October. Chris wasn’t able to join me this time (some silly excuse about his 1st wedding anniversary!), but WGNSS Entomology Group leader Richard Thoma was able to come. In the time since last year’s trip, I had made contact with a fellow from Washington – “Beetle Bill” Smith – who grew up near Barber County and whose parents-in-law still live there. Bill is a retired science teacher and a “carabidologist” – that is, he studies ground beetles (family Carabidae), a group of beetles closely related to tiger beetles (some carabidologists even consider tiger beetles a subfamily of Carabidae). Being from the area, Bill knew many of the local landowners, and being a carabidologist, he had secured their permission to collect beetles on their ranches as part of his own studies. Bill had previously found *Cicindela pulchra* on a nearby ranch and offered not only to take us there, but also to put us up for the night at his in-law’s house. Such hospitality could not be declined, so Rich and I left St. Louis one Thursday morning, arrived in Barber County early that evening, and enjoyed the delightful company of Bill and his wife, Janet. They even went so far as to fix us biscuits and gravy for breakfast the next morning before we headed out to the field.

The weather had been perfect earlier during the week, but a cold front the night before we left dropped nighttime temperatures into the low 40s. Overcast skies and a forecast high of only 60° left us wondering if we would find any insects at all, much less the sun-loving tiger beetles we came to see. We drove the 10 or so miles from the house to the ranch, and as we followed
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Bill's truck through the gate we could see an extensive area of red clay hills rising out of the mixed shortgrass prairie about a mile away. I knew the breaks (eroding slopes) in these hills must be where we were headed, and this was confirmed as we followed the 2-track around the south end and up on top of the hills. The landowner had requested we park on top, where he would be able to see our vehicles from his house. As we assembled our equipment and nets, the usual feelings of anticipation were tempered by the cold, gray conditions. We walked down the hillside to an open flat below one of the breaks – exactly where Bill had last encountered the beetle. Nothing. We walked the area for a while, and then started wandering off into adjacent areas. Nothing. I looked at the sky – a blue area could be seen off to the north, but the sun was well covered. I looked for any hint of movement in the clouds, thought maybe they were slowly moving south, and then decided I was just tricking myself with wishful thinking. We wandered back over the flats where we started – still nothing. Eventually, I became distracted collecting some small longhorn beetles (*Crossidius pulchellus*) clinging torpidly to broom snakeweed (*Gutierrezia sarothrae*) blossoms – nothing spectacular, but a species I had not yet collected. Plus it was something to do. It was now close to noon – primetime for tiger beetles, but with still no hint of the beetles our hopes were fading fast. I pondered whether we had missed the timing (again!) or if the timing was right but conditions were just too cold. I dreaded the thought of making the 10-hour drive back to St. Louis empty-handed (again!). I gave another look at the sky, and this time there were hints of sun appearing through small breaks in the clouds. Just then, Bill yelled out from ~25 yards away – he had found one! I hurried over to where he was standing, and before I was within 15 feet I could see the beetle clumsily running across the ground. What a spectacular sight! We watched him for awhile before capturing him – he was very easy to collect because of the cool temperatures. We began searching the area intensively again, and after about 10 minutes I saw another one. I collected it, too, and no sooner than I had finished closing the bottle I looked up and saw another one. By now, the clouds had completely moved out, and while it was still relatively cool the sun was shining brightly. Beetles began appearing faster than we could see them, and eventually they were running abundantly over the very ground that we had so thoroughly, yet unsuccessfully, scoured just an hour or two earlier in the day. After collecting a sufficient series for study, I began exploring adjacent areas to see how extensively the beetle occurred at the location. Interestingly, the beetle was highly localized, occurring almost exclusively on the more sparsely vegetated flats immediately below the red clay breaks. No beetles were found in or on top of the breaks themselves, and they also became quite scarce on the flats further away from the breaks. I also searched the flats below some adjacent breaks and found the beetles only when there was a complete lack of woody plant growth in the flats. No beetles were found in flats where eastern redcedar (*Juniperus virginiana*) was growing, however sparsely. The apparent habitat specificity of the beetle was further emphasized by visits to several other locations later in the day and during the following day, where several clay banks and erosion cuts along roadsides and streams were searched. Other tiger beetles were seen in these areas, but not *Cicindela pulchra*. We even returned to the Scenic Overlook where Chris and I had searched for the beetle the previous season, and at least in the (Cont'd, next page)

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roadside areas not enclosed by fence the beetle was not present.

There were additional successes on the trip besides *Cicindela pulchra*. Bill and I each found one *Megacyllene comanchei*, a beautiful longhorned beetle only recently discovered in western Texas and, until now, known only from the type series. Another longhorned beetle, *Crossidius discoideus* subsp. *sayi*, and the Denver tiger beetle (*Cicindela denverensis*) were found later in the day at a nearby ranch, both representing species I had not collected before, and Rich and I found one black individual each of the claypath tiger beetle (*Cicindela purpurea* subsp. *audubonii*) among the more abundant and normally colored greenish-purple individuals. Two halophilic (saline tolerant) species - white-cloaked (*Cicindela togata*) and oblique-lined (*Cicindela tranquebarica*) tiger beetles - were seen just across the border in Oklahoma at Salt Plain National Wildlife Refuge, where Bill had managed to arrange collecting permits for us. In all, we found nine species of tiger beetles. We also had some non-coleopteran successes - Rich found western pygmy blue (*Brephidium exile*), bordered patch (*Chlosyne lacinia*), and Gulf fritillary (*Agraulis vanillae*) butterflies. These are species not commonly found in Missouri, and according to Bill the Gulf fritillary may be a site record for the Salt Plain Refuge. We also spotted a male chocolate tarantula (*Aphonopelma baergi*) crossing a road further west in Clark County, Kansas - presumably searching for a mate. He now resides in a terrarium in our home where he enjoys a life of leisure and hand-fed crickets and has been affectionately named "Crawly" by my daughter, Mollie. Without question, however, seeing *Cicindela pulchra* in its native habitat, watching its behavior, and understanding its quite specific habitat requirements (and demand for sun!) was the biggest success of the trip. I am also comforted by the fact that the beetle population appears to be secure in south-central Kansas - red clay breaks and the flats below them occur abundantly throughout the Gypsum Hills region, mostly on private ranches where they are largely protected from disturbance. Now, whenever I look at a pinned specimen of *Cicindela pulchra*, I will see much more than just the specimen in front of me.

REPORT ON MARCH 1 BOARD MEETING - Editor

The draft of Guidelines for Announcements in *Nature Notes* discussed at the previous Board meeting was approved. Progress reports were presented on preparations for the annual Banquet, and Margy Terpstra was complimented on how well this seems to be going. It was reported that the search for projects to be funded with the Holcim Award seems to be going well, and it is possible that that an announcement may be made soon by the search committee, possibly as early as the next Board meeting.

Several WGNSS members assisted in a recent multi-day back yard birding seminar at the Missouri Botanical Garden by leading bird walks, etc. WGNSS brochures were handed out to attendees, and at least two new members were obtained at the event.

Anne's now famous Townsend's Solitaire exited the scene about Feb. 15.

Adams reported that the entire *Nature Notes* file has now been indexed and that indexes for years 1929-97 have been edited and are ready for the WGNSS website. Because of data transmission problems via diskette, only about half of this number have been added to the website. Randy Korotey has provided an elegant, user-friendly year table on the website to facilitate access. Clicking on the desired year will bring up the index for that year. (If the year is displayed in blue in the year table, the index for that

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